



SATURDAY, JUNE 26, 1875.

## MASTER CAR BUILDERS' ASSOCIATION.

## Ninth Annual Convention.

We have heretofore published abstracts of the various reports presented to the Convention and of the proceedings, and now give a summary of the discussions.

After the reading of the first committee report, that on Heating, lighting and ventilating cars, the discussion was commenced.

Mr. PARTRIDGE said that it took a very much smaller opening than was commonly supposed to supply 1,000 cubic feet of air per minute to a car in motion; a small ventilator would do it.

Mr. CHAMBERLAIN (Boston & Albany) said that he had two plans of ventilation; one was Mr. H. A. Gouge's, and he thought that gentleman had better explain it at the opening of the discussion.

Mr. GOUGE, being called on by the Convention, then proceeded to explain his system, being aided by drawings. His idea of ventilation was to get air in from the outside, heating it in winter, pass it through the car and then pass it out. He had tried his system on an old car on the New Haven road. A large aperture was made under the hooding in front. When the car was in motion a current of air is injected into a tube, passes down it and is discharged at the bottom, being heated in its passage. He could pass as high as 1,200 cubic feet of air per minute through the car without producing any current. The air is discharged at the floor, but it is exhausted at the ceiling. There are two outlets and one inlet. The heating apparatus is on the principle of a hot air furnace and the drafts and the fire are under perfect control, so as to secure an even temperature. He had taken a car at 10° and heated it up to 90°. Air could be injected at the sides as well as the front of a car.

Mr. FORD (Little Miami) asked how it differed from the Speir warmer and ventilator, where the air was taken at the top of the car, passed around the stove and through an air-passage into the car.

Mr. GOUGE said in this case the larger quantity of air was taken up from under the feet and the smaller from the top. The air came down through the tube and was sifted of all dust and cinders. It had to rise up to the top again before it could get out. The outlet was the nicest point of the whole thing; it was made so that it would not admit dust, cinders or rain. It had been tried of different sizes, and had a regulating valve which opened by a weight. There was no machinery. When the car was stationary the pressure of the heated valve was enough. An experiment was made to determine how much air per minute could be passed through a car without producing a current. With two openings and a certain size of pipe he got 500 feet. The pipe was diamond-shaped, 11 inches round. The car was tried on a way and an express train. With two openings, all others being sealed up, he got 500 cubic feet per minute. By increasing the openings they could get up to 2,000 feet per minute. The pipe was made in funnel form, contracted downwards, so as to get a pressure. The expense of the apparatus would be from \$400 to \$500 per car. The arrangement included a foot warmer passing along each side of the car. The apparatus took no more room than a Baker heater. He had tried various plans, and found that the hot air diffused itself very quickly through the car. He only used one furnace, which took up 41 inches. The hoods were divided, but entirely distinct, working each way.

Mr. CHAMBERLAIN, in answer to a suggestion that carbonic acid would not pass out of an opening at the top of the car, said that scientific authorities held that, while it was heavier than air, it would pass out at the top as readily as at the bottom.

Mr. GOUGE said that he had his doubts. He had made a study of ventilation for 15 years and had made a great number of experiments and analyses of air in buildings, halls, cars, etc. In the course of experiments made by him in connection with the ventilation of the House of Representatives at Washington, he found 100 per cent. more carbonic acid gas at the ceiling than at the floor, and 50 per cent. more in the gallery than at the floor. That had been his experience everywhere. In the famous grotto at Naples where carbonic acid gas is generated in large quantities, a dog will be killed, but a man can live because the gas lays on the floor and is not diffused. You can carry it in a hat and pour it into another, but if it is left a short time it will diffuse itself through the air. There is a popular impression that the gas settles at the surface, but it is not correct.

Mr. DAVENPORT asked whether in running with the heater at the back end of the car, the front end would not be uncomfortably cold.

Mr. GOUGE said it did not prove so. He had tried it on the New Haven road last winter, the car being on a way train making frequent stops, the thermometer outside being as low as 10°. With the heater at the rear end he had the temperature up to 92°; and there was only 3° difference between the two ends of the car.

On motion of Mr. FORD a Committee on Communications, consisting of Messrs. F. D. Adams and John Kirby, was here appointed. The discussion was then continued.

Mr. KIRBY said that Mr. Gouge's statements did not agree with the committee report, which said that the carbonic acid gas could not be drawn out at the top of the car.

Mr. CHAMBERLAIN said that the report stated that it must have some assistance, must be forced out.

Mr. KIRBY said that force was employed in a great many cars where it was claimed that the bad air passed off at the top. There was so great a difference of opinion that he did not suppose that the Convention could recommend anything that would be agreed to by all the members.

Mr. FORD, being called on, said that the question was in a fair way to be solved. This question of ventilation had been surrounded with more difficulty than it deserved. He thought that they had heretofore made a very simple mistake. They had undertaken to ventilate a car by drawing the air out and had made no provision for letting it in. They had advanced so far that the mistake was seen. It made very little difference whether the air was exhausted or admitted at top or at bottom; the point was to be sure that you did exhaust it and did admit it. To ventilate a car you must do both. A practical difficulty has been referred to, that of warming the air sufficiently in cold weather. He had noticed that all animals, men and women included, had a great abhorrence of cold. To get thoroughly chilled is very deleterious to health, and when passengers feel chilly, their natural instinct leads them to close the openings through which cold air enters or warm air passes out, for they feel that warmth is of more importance than pure air. To ventilate thoroughly you must admit pure air and keep it warm. You must admit enough to keep it fresh, and you must exhaust enough to keep it pure. Any contrivance that would do those three things was good enough. He would not propose any specific plan, but would leave it to the ingenuity of the car builders, and could have them comprehend the necessity of admitting enough

fresh air. There must be an opening to let it in; it was not sufficient to exhaust it only. Some years ago, when he was connected with the Illinois Central, they had a very effective system. He asked Mr. Snow, who was connected with that road, concerning it.

Mr. SNOW (Illinois Central) said they were still using that plan. They introduced the air through a revolving hood. They tried a stationary hood, but it did not let in enough air. They run the air through a common Howard stove; it goes down to the bottom, around the stove up to the top and then into a flue that leads along the length of the car. They had no trouble in keeping a car warm. They had to have a damper to close it off, to keep the car from getting too warm. They had a plan that worked very well. There were four openings, 16x22 inches, on the top and at each corner, taking the air in at about 5 feet from the floor. These could be closed by a register. Then they had an air space under the seat, running along to the end of the car, where there was a large exhausting hood or top. That worked very well as long as it was taken care of and kept from filling up with cinders. They did have an iron water tank in connection with this at one time, but did not use it now as they found it impossible to keep it filled with water. As long as water was kept in it, it worked very well.

Mr. CHAMBERLAIN asked if that was not Speir's plan, excepting the revolving hood.

Mr. SNOW thought it was just the same as those just shown, except that the latter had a register at every seat and an exhaust opening. They used two stoves, at diagonal corners.

Mr. FORDNEY said it was the same as Speir's system, except the revolving hood. He understood that with a fixed hood the draft is sometimes reversed; with the revolving hood there was no trouble. He thought the revolving hood was an important thing in any system. It should be substantially made. There was one at the Car-Builders' Association rooms, made of cast iron, which he thought was good.

Mr. SNOW said they used a galvanized iron hood and had no trouble.

Mr. FORDNEY asked Mr. Chamberlain what success he had had with ventilators in the front end of the car. They had a notice on them that if passengers wanted fresh air they must leave the ventilator open. He would like to know if that notice made any difference.

Mr. CHAMBERLAIN said they had had some trouble. If the ventilator opened a little hard passengers would take a stick or an umbrella to open it and would break the glass. The only complaint made is that there is too strong a current sometimes. In another year that system would probably be improved so as to diffuse the air more evenly. The systems of Mr. Gouge and of Mr. Gates, of Boston, were, he thought, the only two in use that are entirely practicable. He thought they could get up a good system without using patents. The more he tried the easier he found it to ventilate a car, but he had to keep away from scientific men.

The PRESIDENT said that he had been requested by several prominent men to ask members to present some system for ventilating freight cars carrying perishable freight.

Mr. HOPKINS said that there was a difficulty about not using patents. As soon as anyone got a good system he applied for a patent, and he thought it was right.

Mr. CHAMBERLAIN said those who had done so heretofore had thrown their money away; there was not a perfectly ventilated car in the country.

Mr. KIRBY had given some attention to ventilating freight cars. He thought that a car used for carrying meat or similar freight did not need ventilating. The ventilation is caused within itself. Admission of air from the outside was a mistake. In the Fisher refrigerator car no outside air was admitted, and you could keep bread or meat in it a week and take it out dry. The warm air rises, passes over the ice, is cooled and descends. They had cars fitted up temporarily last summer with ventilating holes in each end and tubes to draw the air into the car. They could not keep ice in them; they had to renew the ice three times as often as in the cars where no air was admitted. The Fisher cars would carry ice three days.

The PRESIDENT said that the question did not refer to refrigerator cars but to cars carrying fruit or other perishable freight, but no ice.

Mr. CHAMBERLAIN thought he had not misunderstood. Mr. Kirby had said that the ice will melt faster where outside air is admitted. He himself knew that by carrying fruit in an ice-car where no outside air is admitted it will keep perfectly well, while in the cars formerly used, with openings for air, fruit would spoil in going only a short distance.

The PRESIDENT repeated that his question referred to cars without ice.

Mr. ADAMS thought the last speakers were both right. If they found fruit could be carried better with ice, then they ought to recommend that. He thought the best plan was a car made perfectly tight and kept cold.

Mr. HILDRETH thought this was a question of temperature. Sometimes closed cars became very hot in the day and retained that heat at night, when if ventilated they would cool off at night and decompose the fruit less rapidly. He drew his inferences from experiments he had made at home in the preservation of fruit. The introduction of outside air melts the ice and raises the temperature. There were no offensive gases rising from the contents of the ice-car. He thought this matter of carrying fruit was a question of temperature alone.

Mr. HOPKINS said that meat and fruits were kept a long time in hot countries. He thought that there were other questions besides temperature.

Mr. WILCOX said that Mr. Montgomery, who was present, had great experience in this matter.

Mr. MONTGOMERY, being called on, said that he had invented a ventilating car many years ago. He had given the subject much thought, especially with reference to health. It is necessary to change the air in a car unless ice is present. Moisture and heat together produce decomposition. Meat can be carried by exposure to the air, provided it is dry. In a car the fruits emit moisture and that moisture produces decomposition. If you have something to absorb all the moisture you can close up your car tightly; otherwise you must have a free circulation of air. He then spoke of the connection between health and ventilation. You must have plenty of dry air, as free from carbonic acid as possible, both for the preservation of fruit and of health.

Mr. M. C. ANDREWS thought that whatever system they adopted for passenger cars could be used for freight cars also. If they had a car with a double casing and the air in the space between the casings could be changed while that in the inner car remained unchanged, it could be kept much cooler. He thought, therefore, that such a car would accomplish the object.

Mr. WARD asked whether running a ridge on the roof would not carry off the heat and gas when the car was standing still. The current of air ventilates it enough while the car is running, but when it is standing still it gets very hot and fruit or meat will decay rapidly. The ridge could be used as a foot board and a ventilator and with an opening on each side the air would pass off and the heat escape.

Mr. MONTGOMERY said that with fruit, if we depended on air alone, we must have a free circulation; if ice is used there must be enough to cool all the air. He had seen a very fine arrangement for bringing fruit from Charleston by steamer. In a large refrigerator a circulation of air was kept up by a fan worked by an oscillating engine. They could not have such an apparatus in a car, hence more ice must be used. The moisture of the air should be measured, and dry air introduced if it was too great. Mr. GOUGE asked how it could be done.

Mr. MONTGOMERY said they must have a machine to force the air in and one to exhaust it, and they must be automatic. The motive power could be the moving train. The amount of air needed would depend upon the volume of fruit and air.

Mr. GOUGE asked how much air would be needed to keep, say a ton of meat.

Mr. MONTGOMERY said it would take a column of air about a foot square, moving about 10 feet a minute.

Mr. GOUGE would not want to pay for the ice used in such an arrangement.

Mr. MONTGOMERY proposed to keep the meat without ice, by the circulation of air. A very simple arrangement could be made in which very little ice would be used.

The question was then put on a motion that the discussion be closed and the committee continued another year.

Mr. CHAMBERLAIN did not want to serve another year.

Mr. FORD hoped that the committee would serve. They were agreed that a better system of ventilation was needed and that there must be some way of admitting and exhausting the air. From what Mr. Chamberlain had said he thought that he was on the track of improvements. He hoped the discussion would continue.

Mr. GRIFFITH thought that the committee deserved their thanks, and that the old members could continue the work better than a new committee.

Mr. CHAMBERLAIN said that unless the committee could have better support they could not do much. Only 14 answers were received to 500 circulars. If every one would make some experiments and send the committee the results, they might get at something of value.

Mr. MONTGOMERY said that they must not despise science. It could easily be ascertained how much air was needed.

Mr. HILDRETH did not despise science, but thought that, as practical men, they should not despise the daily practical lessons they received.

Mr. FORD thought that much advance had been made, and hoped members would respond to Mr. Chamberlain's suggestion. The time was rapidly passing, and they could not continue the discussion longer then.

The motion to close the discussion and continue the committee another year was then carried.

## United States Railroads in 1874.

From advanced sheets of the introduction to "Poor's Manual of the Railroads of the United States for 1875-76," which will be issued early next week, we copy the following:

The preceding tabular statements present a full abstract of the share capital, indebtedness, cost, earnings, expenses, dividends, etc., of the railroads of the United States in operation during the year 1874. The total length of these roads whose operations are so reported was, that year, 69,273 miles, against 66,237 miles in 1873, 57,323 for 1872, and 44,614 for 1871. The aggregate cost of these roads, at the close of their last fiscal years respectively, was \$4,221,763,554, against \$3,784,543,034 for 1873, \$3,159,423,057 for 1872, and \$2,664,627,645 for 1871. The increase of cost for the year over that for 1873 was \$437,220,560, while that of 1873 over 1872 was \$625,119,977. Of the total cost \$1,990,997,486 was made up of share capital, and \$2,230,766,108 of various forms of indebtedness, chiefly of bonds maturing at a distant day. The proportion of share capital to debt was as 85 to 100. The average cost per mile of all the roads was \$60,425, against \$57,134 per mile in 1873, \$55,116 for 1872 and \$59,726 for 1871.

The gross earnings for the year were \$320,466,016. Of this amount \$379,466,935 were received for the transportation of freight, mails and merchandise, and \$140,999,081 for transportation of passengers, the proportion of the former to the latter being as 89.8 to 100. The operating expenses for the year were \$330,895,058, being 63.6 per cent. of the gross earnings. The net earnings were \$189,570,958, being 56.4 per cent. of the total. The gross earnings equalled 12.3 per cent. on the total cost of the roads, and the net earnings were 4.56 per cent. of the cost. The amount paid as dividends was \$67,042,942, or 3.39 per cent. on the capital stock.

As compared with the preceding year the results were as follows:

	Earnings.				Dividends Paid.
	Gross.	Net.	From Freight, etc.	On Passengers.	
1874 .....	\$320,466,016	\$189,570,958	\$379,466,935	\$140,999,081	\$67,042,942
1873 .....	\$284,419,936	\$168,810,569	\$380,035,508	137,384,427	67,129,709

The gross earnings to an inhabitant were \$12.32, against \$12.80 for 1873, \$11.63 for 1872, and \$9.81 for 1871. The ratio of total mileage to population in 1874 was one mile of road for every 581 inhabitants, as against 582 for 1873, and 600 for 1872.

The decrease was in consequence of the financial revulsion of 1873. That such a revulsion should occur was inevitable from the investments made in railroad enterprises far in excess of the provisions existing for their support. The pause in construction of these works (only 1,940 miles having been opened in 1874, against an average of over 6,000 miles for the five preceding years), and the consequent withdrawal of the vast sums of money required for the construction of such an immense extent of line annually, was fully sufficient to create great embarrassment to all the interests, particularly to those engaged in the manufacture of iron. It is a gratifying fact, however, that the tonnage transported by the railroads during 1874 has exceeded that transported in the previous year, proving that the greater portion of our industries have suffered no material disturbance.

The net earnings for the past year were \$189,570,958, against \$183,810,569 for 1873. The reduction in the cost of operating our roads has been due in great measure to the decline in the prices of material of all kinds as well as of labor.

The mileage of railroads in the New England group of States for 1874 was 5,617, against 5,303 for 1873 and 4,574 for 1872. Their cost was \$248,344,726, against \$263,697,778 in 1873, and was made up of \$137,125,915 of share capital and \$111,218,811 of debt. Their average cost per mile was \$42,882, against \$48,882 for 1873. This apparent decrease is caused by the omission of the Boston, Hartford & Erie Railroad, representing \$22,500,000. If that amount be included the cost would be \$270,844,726, and the cost per mile \$48,397. Their gross earnings were \$50,064,774, against \$51,676,688 for 1873. Of the gross earnings \$27,952,967 were received for the transportation of freight, mails, etc., and \$22,111,787 for the transportation of passengers. The percentage of gross earnings to the cost of roads was 20.16 per cent. The net earnings were \$16,713,183, and equalled 6.75 per cent. of such cost. The earnings per head of population equalled \$13.75, against \$14.30 for 1873. The dividends paid amounted to \$8,511,971, and equalled 6.21 per cent. on the total share capital. The ratio of total mileage to population was one mile of line to every 671 inhabitants, against 685 for 1873.

The mileage of the railroads in the Middle group of States for 1874 was 12,674, against 12,441 for 1873. Their cost was \$1,318,399,092, against \$1,126,702,107 for 1873, and was made up of \$687,934,601 share capital, and \$630,464,491 of debt. Their average cost per mile was \$102,408, against \$90,186 for 1873. Their gross earnings were \$116,498,438, against \$194,052,302 for 1873. Of the gross earnings \$144,798,567 were received for the transportation of freight, mails, etc., and \$41,699,871 for the transportation of passengers. The percentage of gross earnings upon the cost of roads was 14.14. The net earnings were \$70,188,972, and equalled 5.32 per cent. of such cost. The earnings per head of population equalled



\$16.95, against \$18.00 for 1873. The dividends paid amounted to \$37,600,154, and equalled 5.7 per cent. on the share capital. The ratio of total mileage to population was one mile of line to 769, against 772 for 1873.

The mileage of the railroads of the Western States for 1874 was 35,639 miles, against 32,973 for 1873. Their cost was \$1,972,177,844, against \$1,730,728,234 for 1873, and was made up of \$899,030,222 of share capital and \$1,073,147,622 of debt. Their average cost per mile was \$54,329, against \$52,490 for 1873. Their gross earnings were \$214,869,477, against \$211,717,781 for 1873. Of these \$138,086,011 were received for the transportation of freight, mails, etc., and \$56,783,466 for that of passengers. The percentage of gross earnings to the cost of the roads was 10.89. The net earnings were \$75,546,695, and equalled 3.8 per cent. of such cost. The earnings per head of population equalled \$14.17, against \$14.33 for 1873. The dividends paid amounted to \$16,605,832, and equalled 1.92 per cent. on the share capital of the roads. The ratio of total mileage to population was one to 445, against one to 406 for 1873.

The mileage of the railroads of the Southern States for 1874 was 13,505, against 13,908 for 1873. Their cost was \$523,309,223, against \$509,324,106 in 1873, and was made up of \$213,974,148 of share capital, and \$309,715,075 of debt. Their average cost per mile was \$38,978, against \$36,772 for 1873. Their gross earnings were \$52,259,241, against \$53,696,409 for 1873. Of the earnings \$34,782,286 were received for the transportation of freight, mails, etc., and \$14,131,291 for that of passengers. The percentage of the gross earnings to the cost of the roads was 9.9; the net earnings were \$17,269,332, and equalled 3.3 per cent. on such cost. The earnings per head of population equalled \$14.55, against \$14.76 for 1873. The dividends paid amounted to \$1,068,455, and equalled only 0.50 per cent. on the share capital of the roads. The ratio of total mileage to population was 735.

The mileage of the railroads of the Pacific States for 1874 was 1,633, against 1,612 for 1873. Their cost was \$159,332,709, against \$151,090,809 in 1873, and was made up of \$83,112,600 of share capital, and \$76,220,109 of debt. Their average cost per mile was \$89,981, against \$95,500 for 1873. The gross earnings were \$16,774,086, against \$15,276,747 for 1873. Of the gross earnings \$13,478,961 were received for the transportation of freight, and \$6,272,666 for the transportation of passengers. The percentage of gross earnings to the cost of the roads was 10.4; the net earnings were \$9,852,776, and equalled 6.1 per cent. on the share capital.

As already remarked, the past year has been the first, in the last fifteen years, in which the earnings of our roads have not, for any year, exceeded those for the preceding one. The cause is to be found not so much in the condition of the industries of the country as in its currency. The past two years have given bountiful crops. There never was a period in our history in which there was such an abundance of the products of our soil and of our manufactures. In spite of all this the year has been one of unexampled dullness in every department of business and trade. This undoubtedly has been due to the fear of embarking upon enterprises, or of entering upon long engagements, in the present condition of our currency. Although, with it as it is, a recovery from the present depression may be speedily expected, the complete restoration of our prosperity is not to be hoped for until the currency is restored to the specie standard. Such now is the conviction not only of business men, but of nearly the whole community. The experience of the past is on all hands admitted to be a full answer to the advocates of the continuance of our present financial system, and some plan for its restoration must be speedily devised.

The result for the past year, on the whole, cannot be considered an unfavorable one. The earnings of the roads were only \$5,33,919, or 1.1 per cent. less than those for 1873. They were \$16,224,961, or 10 per cent. greater than those for 1872. They exceeded by \$117,138,808 the earnings of 1871. These facts show how intimate are the relations which the railroad system sustains to the business of the country, how potent its influence in the development of its resources, and the firm foundation on which it rests. Previous to 1874 the annual percentage of increase of earnings for many years exceeded 10 per cent. those of the one immediately previous. A similar rate of increase for the past year would have given an aggregate of earnings of about \$385,000,000. Such a result would undoubtedly have been reached but for the condition of our currency; that it was not reached is one of the many proofs of the penalty we pay for delaying the necessary reforms.

During the five years ending with 1873, 28,428 miles of new line were constructed. Among these were from 10,000 to 1,000 miles of what are termed *land-grant* roads. The construction of these was pushed with extraordinary energy to prevent the lapsing of the lands granted, which was to take place provided the roads were not built within a specified time. Such roads, with perhaps the exception of the Northern Pacific, have either been built or the grants have lapsed. No considerable extent of mileage, therefore, is likely to be constructed for some years to come. The roads in operation, consequently, will receive the benefit of whatever increase of traffic takes place.

The parties largely chargeable with the excess of line not called for by any business want are the railroad companies themselves. A spirit of rivalry, or advantage to parties connected with these works, has led to the construction of a large extent of unproductive mileage. The great offenders in this direction are the Chicago & Northwestern, the Milwaukee & St. Paul, the Toledo, Wabash & Western, the Michigan Southern, and the Erie. The Toledo, Wabash & Western and the Erie have in consequence been forced into liquidation. The Chicago & Northwestern and the Milwaukee & St. Paul have probably sacrificed the value of their share capitals upon wild and visionary schemes.

It is greatly to be regretted that the Erie should again, for the third or fourth time, be in the hands of a Receiver. The effect, to say nothing of the suffering and inconvenience to the holders of its bonds, is to cast an undeserved discredit over our whole system of railway management. It should be remembered, however, that the three other great companies whose lines have a similar relation to the internal trade of the country, by connecting its great interior basin with tide water, and whose routes, especially those of the Pennsylvania and Baltimore & Ohio, possess no advantages over that of the Erie, have been uniformly successful, paying, almost for the whole period they have been in operation, dividends considerably exceeding the usual rates of interest.

Although there was a slight decrease in the gross earnings of 1874 from those of 1873, the net earnings were somewhat greater. This increase has been due, in part, to the better systems of management, and to the reductions that have taken place in the price of labor and all kinds of material. As prices lower than those which have prevailed for years past must rule for several years to come, there can be little doubt that the proportion of net earnings to gross will continue to increase. Notwithstanding, therefore, the defaults that have taken place in the payment of interest, an encouraging view should be taken of this great investment, as there is none other so firmly grounded in the necessities and habits of human life. The great crisis in our railroads previous to that which has just been suffered occurred in 1837-38. At that time the railroad system of the country was only partially completed. The traffic of each road, consequently, was mainly restricted to that of its own route. At the present time our lines form a vast and complete system, so that not only is every section of the country fully accommodated, but roads in portions of it most widely separated contribute largely to each other's traffic. The earnings per head of population, consequently, are now five times greater than they were in

1838. Our foreign markets have, in the meantime, been immensely enlarged, and these are not subject to the fluctuations which attend our own. These are some of the causes which have maintained the earnings of our roads during the prevailing depression up to their present high figures, which far exceed those for any previous year, except 1873. We do not look for any considerable falling off in 1875. The tonnage of our roads for 1874 was very nearly or fully equal to that of 1873, while that for 1875 is likely to exceed that of the past year. Should there be a speedy restoration of specie payments, we have every reason to believe that the rate of increase of the earnings which for the past ten years has equalled annually fully one dollar per head of our whole population, will be indefinitely maintained.

#### Baltimore & Ohio Standard Rails and Splices.

We publish this week a full page illustration of the standard rail sections now used on the Baltimore & Ohio Railroad. It will be seen that the officers of that Company still adhere to an old form which has now been abandoned by nearly all leading roads. This indicates one of two things, either that the engineers of other roads have been to some extent mistaken in the reasons which led them to adopt rail sections which differ so radically from the old form known as the "Erie pattern," to which that used by the Baltimore & Ohio Railroad approximates, or else that the Baltimore & Ohio is in this respect not up to the progress of the times. In the *Gazette* of February 6 of this year we published an engraving of the new standard rail section and splice adopted by the Erie Railway, and which differed from the old pattern in having a deeper and thinner web, and having a shoulder under the head which stands at an angle of only 15 degrees, with a horizontal line, so as to afford a good bearing for the fish-plates. The Pennsylvania Railroad has also adopted a section very similar to this new Erie pattern, and of which we will soon publish engravings.

It will also be seen that on the Baltimore and Ohio road a long wooden splice is used. This is bolted to the outside of the rail, and a shorter iron splice or fish-bar on the inside, with a joint-plate under the rail joint. On the lighter or 64-pound rail the iron bar is fastened with two bolts only, while on the heavier or 72-pound rail it is fastened with four bolts. The wooden splices are spiked down on the cross-ties with long spikes shown in the engraving. The other details of construction are shown so clearly that further description is unnecessary. These forms of rails and splices have, it is said, worked more satisfactorily on that line than rails with deeper and thinner webs. Whether this was due to the advantages of the forms we have illustrated, or to the imperfections of the other rails we are unable to say, but are inclined to believe the latter. These forms are used for both iron and steel rails on the road referred to. We hope, from time to time, to publish illustrations of this kind, so as to give our readers the latest and most approved practice in this important department of railroad construction.

#### Rapid Transit in New York.

In the phraseology of the daily papers, it is now thought that rapid transit in New York City has been made "an assured success" by the passage of what is known as the "Husted bill" and another entitled "an act to authorize the New York Elevated Railroad Company to finish its railroad in the city of New York and to regulate the construction, operation and management thereof." Both these bills have recently been signed by the Governor and have therefore become laws. Of the first we gave a somewhat incomplete abstract in the *Gazette* of May 29. This bill provides that on application of fifty reputable householders and taxpayers that there is need in the county of a steam railway for the transportation of passengers, mails or freight, the supervisors may appoint five commissioners who shall take oath and give security in the sum of \$25,000 for the faithful performance of their duties. The duties of these commissioners shall be to determine upon the necessity of such railways, the route for the same excepting Broadway, and Fifth avenue below Fifty-ninth street and Fourth avenue, above Forty-second street, in New York, and such portions of streets and avenues as are either occupied or designated by an elevated or underground railway, and also all grounds occupied by public parks, or buildings belonging to the State or the United States, provided that the consent of the owners of one half the value of the property bounded on, and the consent also of the local authorities having the control of that portion of a street or highway upon which it is proposed to construct or operate such a road be first obtained; or in case the consent of such property owners cannot be obtained, then the determination of three commissioners appointed by the General Term of the Supreme Court shall be taken in lieu of such consent.

The Commissioners shall invite publicly the submission of plans for such road and shall decide upon the plan to be adopted, determine the time in which it is to be completed, fix the rates of fare and the amount of capital stock. They shall also determine upon the plan of organization of companies for building rapid transit roads.

The bill also specifies the manner in which a company may acquire and hold real estate. It authorizes every corporation formed under the act to cross, intersect, join and unite its railroad with any other railroad before constructed, to enter upon and underneath the several streets and avenues, but prohibits "the construction of a railway crossing the track of any steam railway now in actual operation at the grade thereof, or the erection of piles or supports for any elevated railway upon a railway track now actually in use in any street or avenue."

The bill also provides that "every such corporation shall furnish sufficient accommodations for the transportation of all such passengers and property as shall within a reasonable time previous to the starting of a train be offered for transportation."

Section 36 provides that whenever the route or routes determined upon by the said commissioners coincide with the route or routes covered by the charter of an existing corporation formed for the purpose provided for by this act, provided that said corporation has not forfeited its charter or failed to comply with the provisions thereof requiring the construction of a road or roads within the time prescribed by its charter, such corporation shall have the like power to construct and operate such railway or railways, upon fulfillment of the requirements and conditions imposed by said commissioners as a corporation specially formed under this act.

Each commissioner shall receive \$10 for each day of actual service, to be paid by the company; but if a sufficient amount of capital stock shall not be subscribed within one year after the appointment of such commissioners to authorize the formation of such corporation, the commissioners shall receive no salary, and shall cause to be returned to the subscribers for said stock the amount paid in by them, after deducting there-

from the necessary expenses incurred by said commissioners. Any commissioner may be removed by the Governor for cause. St. Nicholas avenue and the streets or avenues known as boulevards are also excepted from the provisions of the bill.

The second bill, which refers specially to the New York Elevated Railroad Company, authorizes the continuance of the commission appointed under a previous law, and permits the company to change the location of the line or route; from some point at or north of Ninety-ninth street to the Harlem River, the said line may be changed and located along such streets and avenues west of the westerly line of Eighth avenue, that the company may adopt and commissioners approve. It also authorizes the company to collect ten cents fare for any distance of five miles or less, and not exceeding two cents for each mile or fractional part thereof, in addition thereto, providing this change of fare shall receive such consent as is required by previous legislation, which is that of the Mayor and Comptroller of New York City.

It will thus be seen that it rests with the Mayor and Comptroller to determine whether the rates of fare on the present elevated road shall be higher than that which this company is now authorized to collect.

Three different petitions have already been presented to the Mayor asking for the appointment of boards of commissioners, and the New York Elevated Railroad Company has just issued a circular (given elsewhere) asking for proposals for the construction of the upper end of their road to the Central Park.

#### RAILROAD LAW.

##### Liability of Companies for Assaults on Passengers by Employees.

In the case of Hanson against the European & North American Company the Maine Supreme Court holds that railroad companies, as well as other common carriers, are responsible for the misconduct of their servants and for assaults and batteries by them, committed upon passengers, without justification. If the servant be first assaulted, he may defend himself, and may use sufficient force to overcome any unauthorized opposition to his proper performance of any duty; but the assault being over, or the resistance ended, he cannot pursue and punish the wrongdoer, and will make himself and the carrier both liable if he does so. He who seeks to justify a *prima facie* case of assault must show that no more force was used than was suited in kind and degree to the exigencies of the occasion, or the justification fails. Disobedience to the rules of the company, by a passenger, will justify the carrier in refusing to carry him further; but not in maltreating him while continuing to perform the contract for his conveyance.

##### Corporation Mortgages in Pennsylvania.

The Philadelphia *Railway World* of June 19 says: "Prior to 1862, in the Montour company's case, the Supreme Court of Pennsylvania held that there was no equity jurisdiction in any of the courts of Pennsylvania to foreclose a corporation mortgage. In 1862 the Legislature passed an act which provided that the Supreme Court shall have the powers of a court of chancery in cases of corporation mortgages. The new constitution in its judiciary article limits the jurisdiction of the Supreme Court to cases of injunction when a corporation is a party defendant. It is manifest, therefore, that unless the Supreme Court has jurisdiction under the head of injunction to foreclose a mortgage, there is no jurisdiction in any of the courts of the commonwealth to accomplish that result. Counsel for the trustees (Samuel G. Thompson), in drafting the bill in the case of Fargo et al. vs. Oil Creek & Allegheny River Railroad, prayed for a special injunction, and claimed that under a well-settled principle of equity practice, the court having obtained jurisdiction for the purpose of injunction, would retain jurisdiction for all purposes, including that of foreclosure. The Supreme Court, however, has taken a strict construction and limited its jurisdiction to injunctions only. It will be seen, therefore, that it is necessary that legislation shall be obtained to cure this singular omission on the part of the Constitutional Convention."

##### Lien of a Contractor on Mortgaged Premises.

In the case of Sidney Dillon against Bernard and others, Assignees in bankruptcy of the Boston, Hartford & Erie Company and trustees under the mortgages, in which Mr. Dillon sued to recover for work done on the road after the partial bankruptcy of the company and under charge of the trustees, the United States Supreme Court, on appeal from the Circuit, recently decided that a demurrer to a bill in equity does not admit the correctness of the averments as to the meaning of an instrument set forth in, or annexed to the bill. That to create for the future services of a contractor a lien on the particular funds of his employer, there must be not only the express promise of the employer to apply them in payment of such services upon which the contractor relies, but there must be some act of appropriation on the part of the employer relinquishing control of the funds, and conferring upon the contractor the right to have them applied when the services are rendered. In an indenture of mortgage executed by a railroad corporation to trustees to secure bonds issued to raise money to pay off its existing indebtedness and to complete and equip its road, the corporation covenanted with the trustees, among other things, that the expenditure of all sums of money realized from the sale of the bonds should be made with the approval of at least one of the trustees, and that his assent in writing should be necessary to all contracts made by the company before the same should be a charge on any of the sums received from such sales. It is held that a contractor agreeing with the corporation to construct a portion of the road, and obtaining the assent of two of the trustees to his contract, and subsequently doing the work, did not acquire any lien for the payment of his work under this covenant of the indenture on the funds received by the corporation from the bonds.

##### Obligation of a Railroad Company to Take Precautions Against Fire.

In the case of Salmon against the Delaware, Lackawanna & Western Company, recently, the New Jersey Supreme Court held as follows:

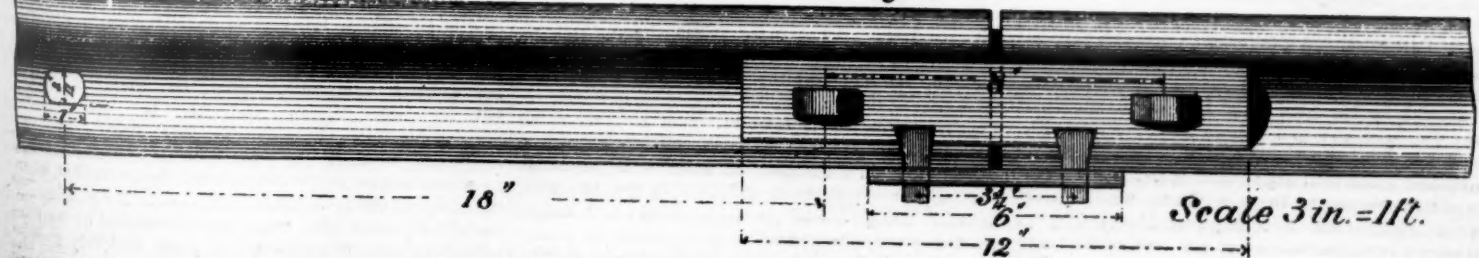
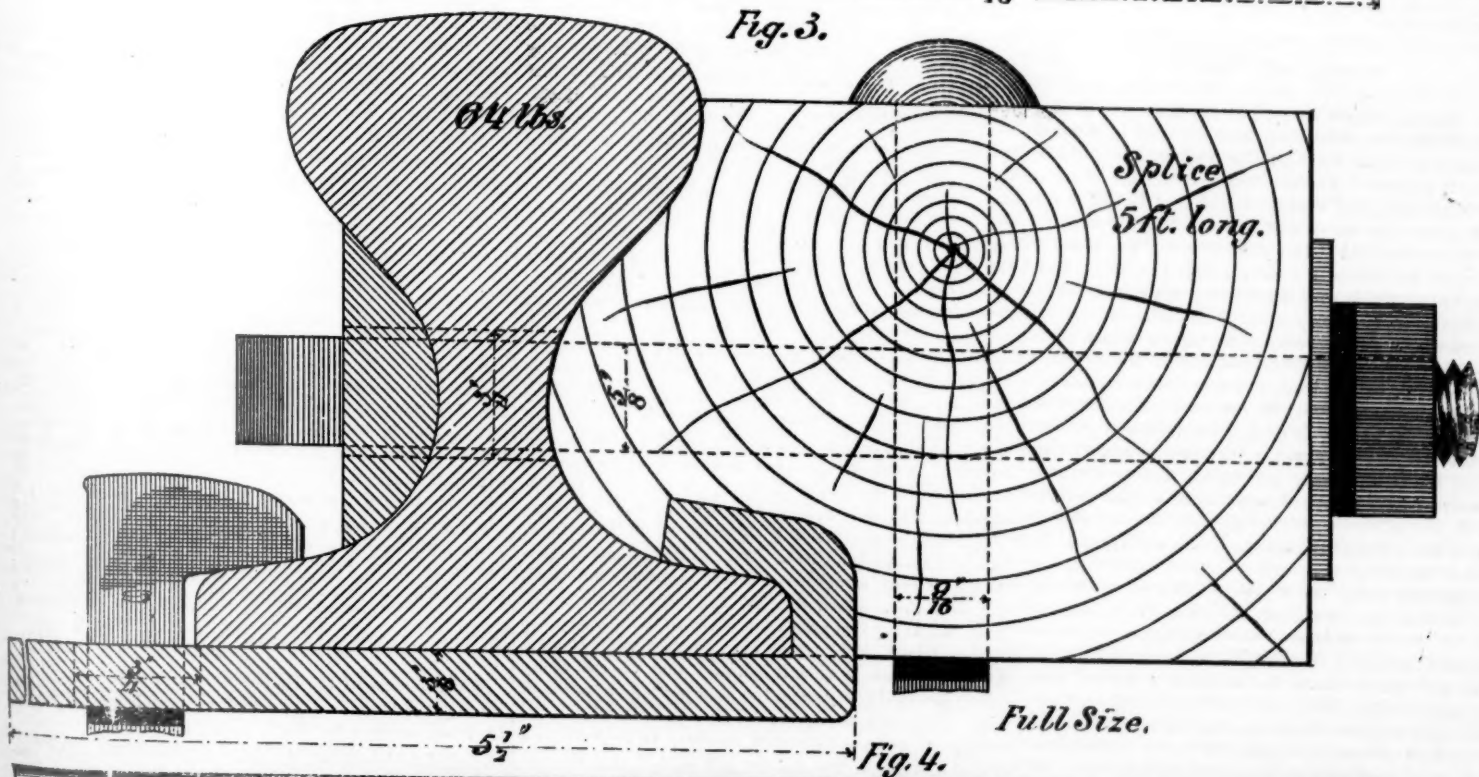
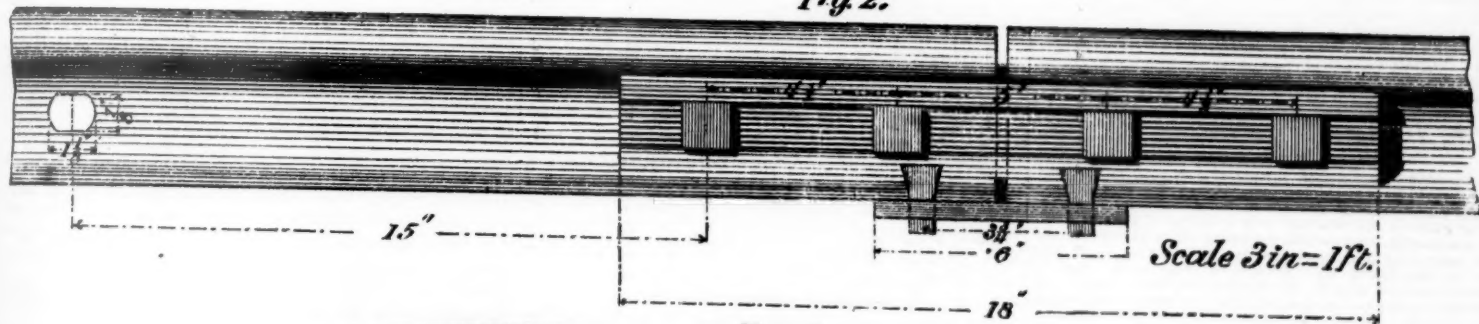
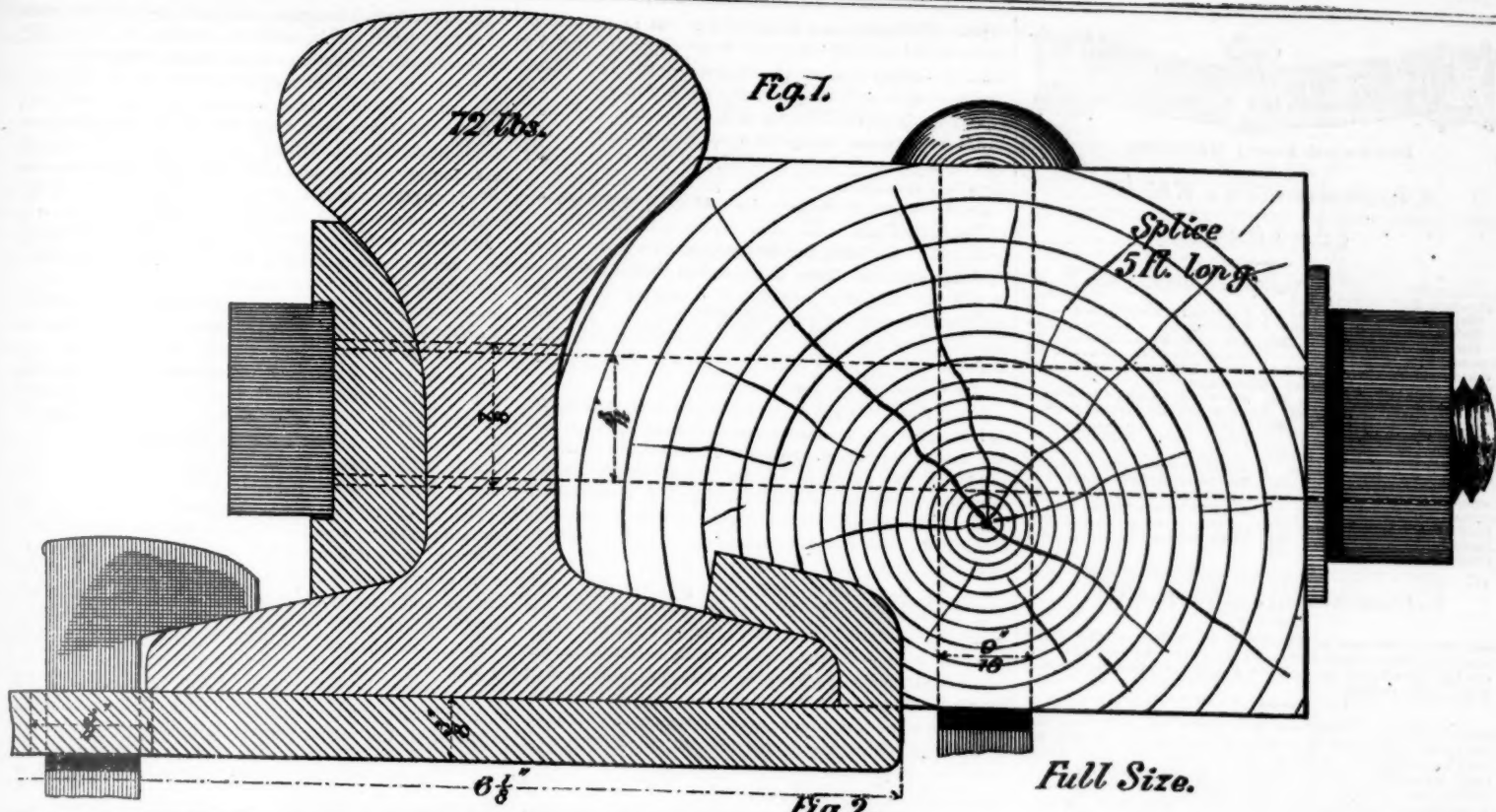
A railroad company is bound to keep its track and contiguous lands clear of materials likely to be ignited from sparks issuing from its locomotives properly constructed and driven.

A person owning land contiguous to a railway is not obliged to keep the leaves falling from his trees from being carried by the wind to such railway; nor to keep his lands clear of leaves or combustible matter; nor on failure to perform such act does he become contributory to the production of a fire originating in the carelessness on its own lands by the railroad company.

##### Invalidity of the Needham Car Wheel Patent.

In the suit of Needham against Washburn for alleged infringement of patent, the United States Circuit Court for Massachusetts decided, some months since, that there was no infringement, as the patent was not valid. Needham's claim was for an improvement in casting steel-tired car wheels (where the steel tire has already been placed) through a number of holes in the circumference instead of one hole in the center, also in making the weld between the cast-iron center and the steel tire without using a flux. The Court held that both claims were for old and common devices, which are not patentable, and one of which, at least, had been tried and abandoned by the defendant.





STANDARD RAIL SECTIONS AND RAIL SPLICES, USED ON THE BALTIMORE & OHIO RAILROAD.

JOHN L. WILSON, Master of Road,





Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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## Editorial Announcements.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## WHERE, AND WHY?

The question which every railroad manager is now obliged to study more carefully than any other is, whether the business under his charge is conducted as economically as is possible. The only way to determine this is to know in the first place what the actual cost is, and in the next to compare that cost with the expenses of previous years or on other roads. In an article which we published two weeks ago under the same heading as this, we attempted to show that with the ordinary methods of keeping accounts such a comparison is by no means easy or satisfactory. For the purpose of having an actual illustration we will select figures from one of the reports—which we have so frequently had occasion to commend—of the Louisville & Nashville Railroad. The report of 1872-1873 is the one before us, and will answer as well as any other for our illustrations. From this we find that the total cost of repairs for passenger locomotives was for the entire year \$108,526.08 and for freight locomotives \$152,020.34. If now we ask the question whether this is much or little, we find the answer is not at all plain. Of course it might be compared with these same expenses of a previous year; but if the amount of traffic the year reported was more or less than the previous year, it would influence the aggregate cost of locomotive repairs. We might make a calculation of the percentage which the locomotive repairs bear to the gross receipts, but if we do this the percentage will depend upon the rates of fare and freight. That is, if the rates are high, the cost of repairs will bear a smaller proportion to the gross receipts than if the rates are low. In other words, as the rates increase the percentage of expenses will diminish, and if the rates are lowered, the percentage will be greater, so that such a calculation will not be a safe basis of comparison. Another method which has been adopted by the Lake Shore & Michigan Southern Railway Company, and to which we have heretofore referred, is to calculate the percentage which the different expenses bear to the total expenses of operating. In the report of that company for the year 1873 the total cost of locomotive repairs—that is both passenger and freight, which are not kept separate—is 5.82 per cent. of the total operating expenses. On the Louisville & Nashville road it is 6.38 per cent.—the heavier grades of the latter road being sufficient reason for the difference.

This method of estimating gives us, however, only a relative comparison. That is, it shows what any one of the

expenses is in proportion to the rest, but not in proportion to the actual service performed. Thus supposing that by careless management all the expenses of the Lake Shore road were increased ten per cent., the cost of locomotive repairs would still be 5.82 per cent. of the total expenses, and therefore such a comparison might not excite a suspicion that they all were in reality ten per cent. greater than they should be.

Another standard of comparison, which is very common, for locomotive and some other expenses is the cost per train mile. We have heretofore pointed out how very misleading this is. Thus if the cost of fuel is estimated in this way, it is only necessary to divide up the trains and haul very few cars with each train to reduce the cost per train mile to a very low figure, and this is exactly what has been done on many roads by those who were responsible for the cost of locomotive service.

A very much better plan, and one which, at least so far as locomotive expenses alone are concerned, is to estimate the cost per car per mile hauled. This method of estimating locomotive expenses has, we are informed, recently been adopted on the Chicago, Burlington & Quincy Railroad, and has been employed for a number of years on other roads. Its effect is to induce those in charge of the motive power to haul as heavy trains as possible, because by that means the cost per car per mile will be less than if the trains are composed of a smaller number of cars. But, while this is a safe plan to adopt for the Locomotive Department alone, it is not an accurate measure of the useful work performed on the road. The ultimate object to be attained by operating a railroad is the carrying of paying passengers and freight. If the cars which are hauled are not filled either with people or commodities for the carrying of which the company receives pay, it does not matter how cheaply they are hauled, it is not profitable to the company. In other words, the only service which has ultimate value to a railroad is the carrying of passengers and freight which pay for being carried. It is ordinarily the only service which is saleable, and therefore the final estimate of the cost of operating should be based on that of carrying a ton of freight and a passenger one mile. It is just as misleading to estimate the final cost of operating a railroad by the cost per car per mile hauled, as it would be for a cotton or woolen manufacturer to estimate the cost of producing cloth by the cost per pound of working up the raw material. In both cases no allowance is made for the waste resulting from hauling empty cars on the railroad, and of that of the raw material in the processes of manufacture. The loss from these sources may be so great on the railroad, on the one hand, and in the manufactory, on the other, as to make the transportation on the former and manufacturing in the latter unprofitable. It is, therefore, evident that the only true standard with which the economy of operating railroads should be measured, is that of the cost of performing the service which is saleable—that is, carrying freight and passengers. Taking now the cost of freight and passenger locomotives given above, and referring to the amount of service performed and given in the same report, we find that 177,399,717 tons of freight, and 43,466,038 passengers were carried one mile, so that the cost of repairs of freight engines was .008569 cents, and of passenger engines .024968 cents per ton of freight and per passenger per mile respectively. Of course, a similar calculation would enable us to determine the cost per ton and per passenger per mile of all the other items of expense. To do this, however, the amount of freight and number of passengers carried one mile must be known, and the cost of repairs of passenger and freight engines must be kept separate. If the same method is applied to freight and passenger cars the cost of their repairs must also be kept separate. The same thing is true of some other expenses.

This method of estimating expenses, while it would afford an accurate standard of determining the cost of operating a railroad, would nevertheless, as already indicated, only show the results and might not point out the cause. Thus, supposing that after estimating, in the way that has been explained, the cost of operating a road, that when the final estimate is made it is found that the cost of say fuel or locomotive repairs is too high per ton or passenger mile. The next question would, of course, be what is the cause? As we have explained, cars may be hauled over a road at a very low cost per car per mile, but if the cars are not filled with paying freight it will not be profitable to the company. But when the locomotive superintendent has shown that he has hauled the cars at a low cost per mile run, his responsibility ends. The distribution or handling of the cars is under the control, or should be, of the transportation department. Now in order to tell whether the cars on a road are handled to advantage, it is necessary to know the number of miles run in proportion to the number of passengers and tons of freight carried one mile. Thus, the total number of miles run by freight cars during the year recorded in the report of the Louisville & Nashville Railroad already referred to was 29,277,473. By dividing this into the number of tons of freight carried one mile, we find that the average amount of freight carried per car per mile was 6.06 tons. The number of miles run by passenger cars, including sleeping

cars, but excluding baggage, postal and express cars, was 3,732,739, from which, and the number of passenger miles a similar calculation shows that the average number of passengers carried per car per mile was 11.74. In both these calculations the mileage of cars on foreign roads has been deducted from the total mileage, which of course should be done in an estimate of this kind. It is evident that such figures will afford an absolutely certain standard of comparison of the operation of this branch of the service during one year with that of others.

In the last annual report of the Lake Shore & Michigan Southern Railroad it is stated that the expenses of operating that line had been very largely reduced by increasing the average train load from 60.7 passengers in 1873, to 68.7 in 1874, and from 136 tons of freight in the former year, to 159.4 in the latter. There is still much difference of opinion regarding the most economical size for freight trains. It is, however, certain that the cost is very much reduced up to a certain point, by increasing the number of cars hauled. Mr. Hayes made some experiments on the Illinois Central Railroad some time ago, to determine the amount of coal burned in running an engine and tender alone over a part of that line. The average amount burned per mile, as shown by these experiments, was 21.8 lbs. per mile run. Now this much fuel must always be consumed in running an engine over a road before any useful work is done by hauling cars. If but one car is drawn, the whole amount of fuel consumed in moving the engine and tender alone must be charged to that car, but if the train consists of forty cars, only one-fortieth of the coal consumed in running the engine and tender alone is charged to each one. This cost, and besides this the train service and other expenses, are less per car per mile in inverse proportion to the size of the train. It therefore becomes very important to know whether the average train is of the most economical size.

Whether it is more economical to run some engines as many miles as possible and lay up others in case all are not needed, or whether it is cheaper to divide the amount of service among all which the company own, is also a question about which all master mechanics are not agreed. So long as this difference of opinion exists, it would, we think, be worth while to observe this carefully by keeping the mileage of engines, which is now, we believe, done on nearly all roads. With this and the mileage of cars it is easy to determine the average size of trains.

We have heretofore called attention to the importance of keeping an accurate account of the mileage of car wheels. This is impossible unless the mileage of cars is known. The difficulty in the way of keeping an account of this service is often said to be that the cars of nearly all companies now run over so many different roads that it is impossible to know how far they run while absent from the home road. While this is true, it must also be remembered that some kind of account, either of time or mileage, is given to the road which owns the cars, which, although not usually correct, would nevertheless give an approximation to the service performed by the cars while away from home. This difficulty would, of course, be overcome if all roads adopted the practice of keeping the mileage of all cars which run over their lines and reporting it to the owners of the cars. This, we believe, will ultimately be done when the importance of knowing the mileage of all cars is fully appreciated. It was in order to show the advantages which would result and the knowledge which would be contributed to railroad managers by keeping accurate accounts of the mileage of cars, that the above has been written. Undoubtedly a uniform system of accounts on all railroads is very desirable, but we believe that the subject has not yet been studied with sufficient care, nor is there enough accurate knowledge concerning it to enable any person or association to adopt such a system advantageously. If what we have written will lead some of our readers to give the subject the study which it so much needs, it will have accomplished what we intended it should.

## UNITED STATES RAILROAD STATISTICS FOR 1874.

While in some of the United States railroad companies are required to make annual returns of their operations to the State, and in a few States the reports required are such as to give a very complete view of the condition and business of the roads, the collection of the greater part of the railroad statistics of this country is yet a work of private enterprise and necessarily undertaken only as a means of profit. The returns, too, being furnished voluntarily by the railroad companies, some of them naturally fail to make them, and it is not possible to collect information as fully as if it were required by the State. Nevertheless, an approximation to completeness has been reached, and the advance sheets of the introduction to Poor's Manual for 1875-76, which have been kindly furnished us by the publishers, indicate by the figures given that only a very small proportion of the total mileage of the United States is omitted, and that the portion, probably, which has the smallest earnings. This year, as for the two previous ones, the Manual, which is to be issued early next week, con-



tains an introductory chapter in which the great body of information collected is summed up and digested, as it were, so as to give a general view as accurate as possible of the whole railroad system of the country.

It must be borne in mind, however, that owing to the system, or lack of system with which reports are made, the reports from which this summary is prepared do not all cover the same period of time. The State reports cover years ending with June, with August, with September and December, while the companies, where State returns are not required, make reports for fiscal years ending with every month in the year. The reports are the latest furnished, but while some of them may extend some months into 1875, others may be nearly a year older, so that while the year is called 1874, it is only for convenience and because it represents the nearest year. This, of course, cannot be remedied in any way or by any authority known to us at present.

Of the figures given in the introduction, we present the most important below:

	1874.	1873.	Inc. or Dec.	P. c.
Length.....	69,273	63,237	Inc.	3.036
Aggregate cost.....	\$4,221,763,594	\$3,784,543,034	Inc.	\$437,220,560
Capital stock.....	1,990,997,486	1,947,638,534	Inc.	43,358,952
D't, chiefly f'n'd.....	2,230,766,108	1,836,904,500	Inc.	393,861,608
Per cent. of debt to total capital	52.84	48.50	Inc.	4.34
Average cost per mile.....	60,425	57,134	Inc.	3.291
Gross earnings.....	520,466,016	526,419,635	Dec.	5,953,619
Gross earnings per mile.....	7,513	7,948	Dec.	435
Freight earnings.....	379,466,935	389,035,508	Dec.	9,568,573
Pass. earnings.....	140,999,081	137,384,427	Inc.	3,614,654
Work'g expenses.....	330,895,058	342,009,373	Dec.	11,114,315
Proportion of working expenses to receipts.....	63.58	65.10	Dec.	1.52
Net earnings.....	180,570,958	183,810,262	Inc.	5,760,696
Per cent. of gross earnings to cost.....	12.30	13.91	Dec.	1.61
Per cent. of net earnings to cost.....	4.50	4.85	Dec.	0.35
Average dividend on stock.....	3.39	3.45	Dec.	0.06
Amount divided.....	67,042,942	67,120,709	Dec.	77,767

The changes shown here are an increase of 4.6 per cent. in the mileage reported and of 11.6 per cent. in capital invested; a decrease of 1.1 per cent. in gross earnings and of 3.4 per cent. in working expenses, with an increase of 3.1 per cent. in net earnings. The percentage of working expenses to gross earnings fell from 65.10 to 63.58, the proportion of gross earnings to total capital invested decreased 11.6 per cent., and of net earnings 7.2 per cent. The average dividend was reduced from 3.45 to 3.39 per cent. on the capital stock. A noticeable feature is the much greater relative increase of debt than of stock, the proportions of the two to the total capital account being more than reversed. It is, perhaps, a little remarkable that while the freight earnings show a decrease of 2.2 per cent., passenger earnings have actually increased by 2.6 per cent., and are 27.1 per cent. of the total earnings in 1874 against 26.1 the previous year.

The mileage and average cost and earnings per mile for the different sections of the country were as follows:

	Mileage.	Cost per mile.	Receipts per mile.
New England States.....	5,617	\$42,892	\$8,913
Middle States.....	12,874	102,408	14,496
Western States.....	35,639	54,329	6,929
Southern States.....	13,505	35,978	3,870
Pacific States.....	1,039	89,931	10,234

In this division of States, Maryland, the District of Columbia and West Virginia are included with the four others more usually known as the Middle States. The Western States begin with Ohio and include all the States north of the Ohio River, with Missouri and Kansas, and all the territories except Washington. The Pacific States are those bordering on the Pacific, with Nevada.

While the amount paid as dividends was equivalent to 3.39 per cent. on the total capital stock, it must not be concluded that the net earnings were sufficient, after paying interest on the debt, to pay such a dividend. To arrive at the average dividend which could be paid, it is necessary to take account of the failures to pay interest on debt. The amount needed to pay interest would, if deducted from the \$67,042,000 paid in dividends, reduce it very materially. Estimating the average interest on the debt at 7 1/2 per cent., which is probably not in excess of the real amount, and deducting that interest from the net earnings, it would leave for dividends only \$22,263,500, or less than one-third of the amount actually paid.

The actual dividend payments were 12.88 per cent. of the gross receipts against 12.75 per cent. the previous year. There has, in fact, been very little change among the dividend-paying companies; few or none have been added to the list and not very many have dropped out.

A statement of the results per mile will show more clearly the average condition of the roads:

	1874.	1873.
Capital invested.....	\$60,944	\$57,134
Stock.....	29,741	29,402
Debt.....	32,203	27,732
Gross receipts.....	7,513	7,948
Working expenses.....	4,777	5,174
Net earnings.....	2,736	2,774
Average dividend.....	968	1,013
Per cent. of working expenses.....	63.58	65.10
Per cent. of net earnings to capital.....	4.50	4.85
Average rate of dividend.....	3.39	3.45

The proportion of new railroad was very much smaller last year than for several previous years. The year was one of general depression, and while the traffic returns are generally incomplete there was in all probability less

## RAILROAD EARNINGS IN MAY.

Name of Road.	Mileage.					Earnings.					Earnings per Mile.	
	1875.	1874.	Inc.	Dec.	Per c.	1875.	1874.	Increase.	Decrease.	Per c.	1875.	1874.
Baltimore & Ohio.....	1,276	1,070	206	.....	19.3	\$1,290,494	\$1,226,010	\$64,484	.....	7.2	\$1,035	\$1,146
Central Pacific.....	1,293	1,260	33	.....	2.6	1,797,000	1,311,699	485,301	.....	37.0	1,390	1,041
Chicago, Danville & Vincennes.....	157	157	.....	.....	.....	55,182	41,646	13,536	.....	32.5	351	265
Denver & Rio Grande.....	120	120	.....	.....	.....	35,630	36,243	.....	.....	1.7	297	302
Georgia.....	228	228	.....	.....	.....	64,366	76,471	.....	12,105	17.1	282	335
Illinois Central.....	1,109	1,109	.....	.....	.....	584,764	621,013	.....	36,249	5.8	627	660
Indianapolis, Cincinnati & Lafayette.....	179	179	.....	.....	.....	138,327	144,872	.....	6,545	4.5	781	809
International & Great Northern.....	456	407	51	.....	12.5	80,858	70,698	10,160	.....	14.4	177	174
Kansas Pacific.....	761	761	.....	.....	.....	289,706	316,647	.....	26,941	8.5	381	416
St. Louis, Alton & Terre H., Main Line.....	196	196	.....	.....	.....	79,467	91,651	.....	18,184	19.8	377	470
St. Louis, Alton & Terre H., Branches.....	71	71	.....	.....	.....	38,990	40,867	.....	1,867	4.6	548	575
St. Louis, Iron Mountain & Southern.....	685	685	.....	.....	.....	264,446	244,894	19,552	.....	8.0	386	358
St. Louis & Southeastern.....	340	340	.....	.....	.....	73,794	88,535	.....	14,834	16.6	211	254
Toledo, Peoria & Warsaw.....	237	237	.....	.....	.....	91,543	93,346	.....	1,803	1.9	386	394
Union Pacific.....	1,032	1,032	.....	.....	.....	1,214,668	910,055	304,603	.....	33.5	1,177	882
Totals.....	8,160	7,860	290	.....	3.7	\$6,123,165	\$5,314,680	\$807,636	\$110,161	15.2	\$751	\$676
Total increase.....	.....	.....	.....	.....	.....	.....	.....	808,475	.....	.....	.....	.....

## RAILROAD EARNINGS, FIVE MONTHS ENDING MAY 31.

Name of road.	Mileage.					Earnings.					Earnings per mile.				
	1875.	1874.	In.	Dec.	Per c.	1875.	1874.	Increase.	Decrease.	Per c.	1875.	1874.	In.	Dec.	Per c.
Central Pacific.....	1,293	1,260	33	.....	2.6	\$6,136,000	\$4,957,348	\$1,178,652	.....	23.8	\$4,746	\$3,934	\$812	.....	20.6
Chicago, Danville & Vincennes.....	157	157	.....	.....	.....	283,644	244,577	39,067	.....	16.0	1,800	1,538	262	.....	16.0
Denver & Rio Grande.....	120	120	.....	.....	.....	138,506	128,856	9,651	.....	7.5	1,154	1,074	80	.....	7.5
Illinois Central.....	1,109	1,109	.....	.....	.....	2,767,300	2,871,439	.....	\$104,079	3.6	2,496	2,689	.....	.....	.....
Indianapolis, Cin. & Lafayette.....	179	179	.....	.....	.....	673,826	728,753	.....	54,926	7.5	3,764	4,071	.....	.....	.....
International & Great Northern.....	456	407	56	.....	13.9	506,596	493,207	12,696	.....	2.6	1,105	1,227	.....	.....	.....
Kansas Pacific.....	761	761	.....	.....	.....	1,174,622	1,293,341	.....	25,720	2.4	1,544	1,661	.....	.....	.....
St. Louis, Alton & T. H. main line.....	196	196	.....	.....	.....	395,178	487,036	.....	91,858	18.9	2,027	2,498	.....	.....	.....
St. Louis, Alton & T. H. branches.....	71	71	.....	.....	.....	241,481	202,03	38,941	.....	19.2	3,401	2,853	548	.....	19.2
St. Louis, Iron Mt. & Southern.....	685	684	1	.....	0.1	1,349,911	1,178,902	171,009	.....	14.5	1,971	1,724	247	.....	14.5
St. Louis & Southeastern.....	340	340	.....	.....	.....	414,182	501,811	.....	87,629	17.5	1,187	1,438	.....	.....	.....
Toledo, Peoria & Warsaw.....	237	237	.....	.....	6	403,465	465,086	.....	61,621	13.2	1,747	1,993	.....	.....	.....
Union Pacific.....	1,032	1,032	.....	.....	.....	4,391,821	3,660,751	731,070	.....	20.0	4,256	3,547	709	.....	20.0
Totals.....	6,640	6,556	84	.....	1.3	18,875,904	17,123,642	\$2,181,098	\$428,631	10.2	\$2,943	\$2,612	\$331	.....	8.8
Total increase.....	.....	.....	.....	.....	.....	.....	.....	1,762,392	.....	.....	.....	.....	.....	.....	.....

traffic than in 1873, while on many roads of large business there was a reduction of the average rates. The year was not only one of light traffic, but in many cases of sharp competition for that traffic and consequent lower rates. As was plainly indicated, however, by returns that we have heretofore published, it has also been a year of decreased expenses. This result has been gained partly by the general diminution of the cost of labor and materials, partly from the more general—in many cases the enforced—practice of strict economy in expenditure. Some of the decrease has probably been made by starving the roads, which is anything but true economy; but some of it, let us hope, represents a real gain in methods of operation.

## THE PROSPECTS OF RAILROAD BUSINESS.

It seemed last year that the railroads were subjected to the severest tests they were ever likely to undergo. The panic of 1873 was a railroad panic, and the falling off in traffic and in rates was so instantaneous in some important directions, and the multiplication of competing railroads had been so great, that most of us felt that the company which could get through 1874 in sound condition would have given good reason for its being considered proof against any ordinary calamity in the future.

Now, there is no doubt that there was a great depression of business in 1874, a great falling off in some kinds of traffic, a greater falling off in average rates, and a decrease in the gross earnings of the average mile of railroad; but, as the figures show which we published a few weeks ago, the reduction in the cost of materials and labor, and consequently in the cost of working the railroads, was so much greater than the reduction in the receipts that the net earnings were considerably larger than in 1873, and if the companies, old as well as new, had not had a larger funded debt to pay interest on in the latter year, they would have been in an unusually prosperous condition.

This year it was hoped that there would be at least a revival of business. The effects of the panic, it was thought, would begin to pass away. The wrecks had certainly been pretty well cleared away, and the way seemed open for a moderate but safe renewal of industrial activity which would have some effect on railroad traffic. Nearly one half of the year has now passed away. The returns of the railroad companies, so far as they have been published, are favorable, but so very few are published that they give scarcely any clue to the traffic and earnings of the railroad system of the country as a whole. On the other hand, a large part of the traffic has been conducted at the lowest rates ever known, and for the calendar year some of the leading staples of the country show a movement in comparison with last year, as follows:

Anthracite coal, a decrease of.....	37 per cent.
Northwestern grain shipments, a decrease of.....	35 per cent.
Atlantic grain exports, a decrease of.....	40 per cent.
Petroleum exports, a decrease of.....	12 per cent.
Cotton movement, a decrease of.....	27 per cent.

With a decrease in these leading articles of traffic, which in the case of three of the most important is enormous, and with a decrease in the average rates on many of the lines, while at the same time there can have been scarcely any decrease in the elements which make up working expenses, the railroad companies must find it

extremely hard to equal, not to say improve upon, the results of last year. General business is not much changed, but the railroads have had a third less wheat and three-eighths less anthracite coal to carry, less cotton and less petroleum. The iron business continues extremely depressed, which makes it probable that there has been less rather than more movement in bituminous coal and in ore. The general dullness of business, and especially the want of money among the farmers, arising from small sales of grain at low prices, has greatly limited the demand for lumber, which is another leading article of traffic, and it is not easy to find any leading industry which is prosperous enough to make its usual demand for the services of the carriers.

So far so good—or rather so bad—but we naturally desire to know what escape there is likely to be from this stagnation. This, however, is a question on which events at this time give very little light. We know that the strike has caused an artificial stagnation in the anthracite region, and that the strike is not likely to last much longer; but then it is a question whether there would really have been any greater consumption of coal if there had been no strike; prices have not reached extraordinary figures, and the furnaces which consume anthracite have not found any difficulty in supplying their customers, but, at prices lower than pig iron has often known before, have had a good deal of difficulty in finding customers to supply. The grain movement, it is true, has been light in spite of a great stock of wheat in the Northwest, much of which remains to be marketed; but the world is well supplied with breadstuffs, it buys very little of us at the current very low prices, and a greater movement in this staple is not to be anticipated until Europe has less grain at home. Should this year's harvest turn out ill, it will take liberally from us, but should Europe have as good a harvest as last year, it will probably want less American grain than ever, and the movement here will be chiefly for home consumption.

There is in this country more than in most others general growth in industries and population which is no interrupted, though its rate is decreased, by the depression following a panic. There are more people yearly, more fields cultivated to feed them, more manufactures and merchants to supply them. This increase is always to be depended upon, and it, in time, brings up the consuming power of the country, except in breadstuffs, to an equality with any temporary over-production. The country has by no means come to a stand-still, though it may seem so, and though there may be a great decline in some important industries. Great as our exports are, they are but a trifle compared with the home consumption, save in two or three articles, and those such as cotton, tobacco and petroleum, for which our market is sure.

Still, the outlook for the immediate future cannot be called a promising one, and many of our railroad companies evidently will be much harder tried in 1875 than in 1874.

The cessation of the existing war of competition, which has been arranged, will doubtless much improve the position of the lines engaged in it, though not to the extent that could be wished. There is probably no obstacle to the restoration of passenger rates to the standard exis-



ting before the war began; but for most of the freight traffic no considerable advance is possible, and that which is most practicable is perhaps the least likely to be made. As we have seen, the reduction of rates has not been followed by an increase of traffic, but the latter remains exceptionally light. A very large part of it is in grain, which will not move at all by rail if the rate is raised, and generally the east-bound traffic, poor as it is, can only be held by maintaining unprofitably low rates. West-bound traffic, we feel sure, would bear a large increase in rates, but strong rates for this traffic can only be maintained by the most perfect harmony on the part of the railroad companies—such harmony, we must confess, as we scarcely ever see even when competition is least active. Four lines, each with empty cars enough going west to carry all the freight in that direction, are so eager to get each for itself the larger share of this traffic that they are very unlikely to maintain rates at remunerative figures. Should they do so, their position will be still further improved. What is to be hoped for and sought in the harmony of railroad companies, however, is simply the putting of the business of transportation on a level with the general business of the country, for no efforts at this time will make it exceptionally prosperous. It must share the fate of the national industry, but it is now, in many cases, suffering a worse fate, and there seems no good reason for that, unless the violent contests of rival companies can be called a good reason. Certainly the railroad companies owe it to themselves, and to the good credit of the country as well, not to make their position needlessly bad.

#### Working Heavy Grades in Switzerland.

A railroad has recently been opened to the summit of Mount Uetliberg, Switzerland, which overlooks, at a height of about 1,300 feet, Lake Zurich, and is much visited by tourists, for the sake of the view. The road was designed in 1872, and it was finally decided to depend upon adhesion simply, limiting the grades to 7 per cent., or 370 feet per mile. The locomotives were built by Krauss & Munich, who agreed to supply them, weighing 27½ tons (55,000 lbs.), which could haul up this grade four cars, carrying 40 passengers each, gross load being 38,500 lbs. The total length of the road is about 30,000 feet, or more than 5½ miles. The lowest grade is 232 feet per mile, but 59 per cent. of the whole length is of grades exceeding 264 feet per mile. The curves are of 500 and 450 feet radius, the latter coinciding with a grade of 327 feet per mile. The track is of the standard gauge, and the rails, of iron, weigh 60 lbs. per yard. There are three tank locomotives of the Krauss pattern, with six drivers coupled, each 36 in. in diameter, and with a wheel-base of only 6 ft. 8 in. They weigh 41,800 lbs. empty, and in service from 52,800 to 55,000 lbs. The heating surface is about 770 square feet, the diameter of piston 12½ inches, the stroke 21¼ inches.

The passenger cars, of which there are six, have platforms and a central passage, as in American cars (which is the common construction in Switzerland), capable of accommodating 40 passengers. They have a box for baggage below the frame, between the wheels; their weight empty is 12,650 lbs. There are also three freight cars.

The road when complete will have cost about \$300,000 gold.

The first ascent was made April 24 of this year. The engine pushed up three cars loaded with ballast and workmen, a total gross load of 27½ to 30 tons. This load was moved without difficulty at a speed varying from 8 to 10½ miles per hour, maintaining a steam pressure of 170 lbs.

The descent is made with compressed air, by means of an apparatus used on the engines of the Rigi Railroad. The speed was 15½ to 18½ miles per hour.

At trials made by the professors of the Zurich Polytechnic School the weight hauled was about 627½ tons, the traction exerted about 7,500 lbs., and the work about 200 net horse-power.

A peculiar feature in the working of this road is the use of a jet of water against the rails, in front of the wheels of the locomotive, sufficient to wash the rails completely. It was observed long ago that the influence on adhesion of a slight humidity such as that deposited by a fog, and that of a veritable layer of water deposited by rain, are entirely different. On the Swiss Central Railroad a jet of water is used on the front wheels of certain engines to facilitate the passage around curves, and the effect on the durability of the tires has been remarkable; but this jet of water, which was only intended to lubricate the inside part of the rail-head, moistens the whole surface in contact with the tire. No modification of the adhesion has been observed as the result of this; this jet of water does not dispense with the use of sand, while at Uetliberg absolutely no use is made of sand, but water is employed exclusively.

These facts were recently communicated to the French Society of Civil Engineers by M. Mallet, and we find them reported in *La Revue Industrielle*.

M. Mallet also described briefly another Swiss mountain railroad, the Rigi-Kulm Line & the lake of Zug, about seven miles long, six miles of it being worked with a peculiar cogged wheel arrangement, or something similar in effect, by which grades of 1,056 feet per mile are surmounted, there being one section more than a mile and a half long with a grade very little less. The radius of the curves, which is uniform, is 600 feet.

Special attention was called to the locomotives by M. Mallet, ordinary boilers with horizontal tubes are used, but special arrangements are made to enable them to pass from a level to an inclination of one in five. In the first place the tubes are quite short, 7 ft. 9 in., though longer than the tubes used in vertical boilers which are only 6 ft. 2 in. Then the boiler is so

placed as to have an inclination forward of one in ten when the wheels are on a level track, so that on an up grade of one in five it has only the same inclination backward.

In order to keep within the limits of weight of 35,200 lbs., the greatest care had to be taken in the construction of the engines. Steel was employed on the most extended scale; the boiler, with the exception of the fire-box, the tubes, the frames, the axles, the wheels, the cogs and the machinery are all of steel.

One of these engines when tried generally made 140 revolutions of its drivers in a minute, and upon very steep grades the speed did not fall below 120 revolutions. The advance being nearly 11 feet per revolution of the adhering wheel, which turns 0.418 of a revolution to one turn of the driving-axle, the speed per hour=60×140×0.418×11 feet=38,625 feet=7.3 miles per hour. It had been a quite general opinion that such an engine could not run faster than about four miles an hour.

These engines push up a car of the Rigi pattern with seats for 54 passengers which weighs about 33,000 lbs. loaded. The trip to the summit is made in about an hour. Similar engines are used on a line from Rorschach to Heiden, where the steepest grades are 477 feet per mile, but there the engines take up three or four car-loads of passengers, or a gross load of 25 to 33 tons.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* has information of the laying of track on new lines as follows:

*Breakwater & Frankford*.—Extended from the former terminus at the Delaware State line, southward 5 miles to a connection with the Wicomico & Pocomoke, near Berlin, Md.

*Paris & Danville*.—Extended from near Hutsonville, south by west to Robinson, Ill., 11 miles.

This is a total of 16 miles of new railroad, making 312 miles completed in the United States in 1875, against 570 miles reported for the same period in 1874, and 1,271 miles in 1873.

MAY EARNINGS are reported by fifteen roads of which one reports only occasionally while the other has never before appeared in the monthly tables. With an increase of 3.7 per cent. in mileage there is an increase of 15.2 per cent. in earnings and 11.1 per cent. in the earnings per mile. The greater part of this increase, however, is due to the very large earnings reported by the Union and Central Pacific. The total mileage reporting is 8,150, and there are two Southern roads and only one company, the Baltimore & Ohio, which owns any road east of Cincinnati and north of the Potomac. For the five months returns are received from thirteen roads with a total of 6,640 miles, which report, with an increase of 1.3 per cent. in mileage, an increase of 10.2 per cent. in earnings and of 8.8 per cent. in earnings per mile. Six of the thirteen show an increase in earnings per mile, the greatest being on the Central and Union Pacific which have 20.6 and 20 per cent. of increase respectively. The number of companies reporting continues very small and their returns come in slowly.

### General Railroad News.

#### ELECTIONS AND APPOINTMENTS.

*Anglo-Mexican*.—At the annual meeting of this company in New York, June 18, the following directors were chosen: S. J. C. Beales, W. F. Drake, N. H. Halsted, J. H. Harris, R. H. Harris, James W. Husted, J. N. Jaffray, E. P. Mitchell, J. C. Robinson, S. O. Rockwell, Edward W. Serrell, W. H. Wood, H. C. Young. The board elected J. H. Harris President; N. H. Halsted, Vice-President; H. C. Young, Secretary and Treasurer; C. W. Ramsey, Assistant Secretary.

*Salisbury*.—The officers of this re-organized company, formerly the Salisbury & Baltimore, are as follows: President, E. D. Yutz; directors, W. G. Bear, Peter S. Hay, M. A. Sanner, D. C. Scott, Noah Scott, Alexander Stutzman; Secretary and Treasurer, Noah Scott.

*Woodland, Clear Lake & Humboldt*.—The directors have elected the following permanent officers: President, F. S. Freeman; Vice-President, Charles H. Davis; Secretary, E. Bynum; Treasurer, J. D. Stephens. The company's office is at Woodland, Yolo County, California.

*Sonoma & Marin*.—At the annual meeting in Petaluma, Cal., June 8, the following directors were chosen: Galen Burdell, Wm. T. Coleman, H. F. Fairbanks, Wm. Hill, J. N. McCune, H. Moacham, J. B. Switzer, A. P. Whitney, I. G. Wickersham. *Virginia & Truckee*.—At the annual meeting in Virginia City, Nev., June 4, the following directors were chosen: J. L. Bliss, A. M. Edgington, D. W. Hazleton, J. P. Martin, D. O. Mills, A. J. Ralston, I. L. Regue, W. Sharon, F. A. Tritle. The board elected D. O. Mills President; A. J. Ralston, Vice-President; G. A. King, Secretary; Bank of California, Treasurer; H. M. Yerlington, General Superintendent.

*Macon & Brunswick*.—The Governor of Georgia has appointed Maj. Campbell Wallace, Col. W. A. Lofton and Maj. George S. Jones Commissioners for this road.

*Canton Company*.—The new board has elected C. J. Baker, President; Geo. S. Brown, Vice-President; W. W. Janney, Secretary and Treasurer, and Col. Wm. Kimmel, Agent.

*Shreveport & Southwestern*.—At the annual meeting in Center, Tex., June 7, the following directors were chosen: L. L. Tomkies, James M. Foster, Thomas Poland, N. W. Murphy, W. B. Hamilton, J. W. Fuller, W. S. Haven, Shreveport, La.; L. T. Barrett, J. D. Martin, B. Hardeman, Nacogdoches, Texas; E. S. Hicks, W. Wilson, W. C. Carnon, Center, Texas. The board elected officers as follows: W. S. Haven, President; W. H. Swift, Vice-President; W. B. Hamilton, Secretary; L. L. Tomkies, Treasurer; R. L. Parker, Land Commissioner, Center, Tex.; Geo. R. Wilson, Chief Engineer, Shreveport, La. Executive Committee: W. S. Haven, N. W. Murphy, J. W. Fuller, J. M. Foster, L. L. Tomkies.

*Detroit, Lansing & Lake Michigan*.—Mr. W. A. Carpenter has been appointed General Freight Agent.

*Rome & Clinton*.—At the annual meeting in Rome, N. Y., June 16, the following directors were chosen: Wm. S. Bartlett, John Elliott, A. W. Mills, Anthony Peck, James I. Scollard, O. S. Williams, Clinton, N. Y.; L. H. Shattuck, Utica, N. Y.; E. B. Armstrong, B. J. Beach, A. Etheridge, Z. Hill, Rome, N. Y.; George B. Phelps, Watertown, N. Y.; N. B. Foot, Oswego, N. Y. The board elected Wm. S. Bartlett, President; E. B. Armstrong, Vice-President; A. W. Mills, Secretary and Treasurer;

E. B. Armstrong, John Elliott, O. S. Williams, Z. Hill, Executive Committee; A. Etheridge, L. H. Shattuck, Anthony Peck, Finance Committee.

*Cincinnati, Hamilton & Dayton*.—Mr. George T. Stedman has been chosen Vice-President and Mr. Rufus King a director, to fill the vacancies caused by the resignation of Mr. Charles W. West.

*Keokuk & St. Paul*.—At the annual meeting in Keokuk, Ia., recently, the following directors were chosen: Jas. F. Joy, Detroit; Erastus Corning, Albany, N. Y.; N. Thayer, John M. Forbes, Sidney Bartlett, John W. Brooks, Robert I. Watson, Wm. Booth and John N. Dennison, Boston. The road is leased by the Chicago, Burlington & Quincy.

*Georgia*.—Gen. McRae having declined the position, Col. S. K. Johnson, the present Superintendent, has been re-elected.

*Hannibal & St. Joseph*.—A Quincy (Ill.) dispatch says that it has been decided by the management to promote Charles N. Lee, General Agent at this place, to the general superintendency of the road. The new Superintendent, although a young man, has had large railroad experience.

*Cairo & St. Louis*.—Mr. R. W. Clarke having resigned, Mr. J. A. Wentz will assume the duties of General Passenger Agent in addition to his duties as General Freight Agent, to take effect from date. Business relating to either of these departments should be addressed to Mr. Wentz. Mr. E. L. Sargeant has been appointed Cashier and Paymaster.

*Richmond & Mecklenburg*.—The stockholders met in Chase City, Va., June 5, and organized the company by electing George A. Endley President, with the following directors: John E. Boyd, Samuel P. Couch, T. G. Finch, Chase City, Va.; E. B. Goode, Boydton, Va.; Tucker Carrington, Clarksville, Va.

*New Orleans Pacific*.—This company has been organized at New Orleans by the election of the following directors: H. Kennedy, John Phelps, Cyrus Bussey, Geo. Jonas, James Gardner, E. L. Ranlett, Emory Clapp, John H. Kennard, Louis Schneider, W. B. Schmidt, Jules Weis, David Wallace, Hn. Kennedy, E. B. Wheelock and G. W. R. Mayley. The board elected officers as follows: E. B. Wheelock, President; Dr. Hn. J. Kennedy, Vice-President; S. H. Kenned, Treasurer; E. L. Ranlett, Secretary; Kennard, Howe & Prena, Attorneys.

*Kansas Rolling Mill Company*.—The officers of this company, which is building the new rolling mills at Kansas City, Mo., are as follows: President, A. B. Stone, Cleveland, O.; Vice-President and General Manager, Col. W. H. Harris; Secretary, Ira Harris, Jr.; directors: Geo. H. Nettleton, E. C. Smead and B. Henning, of Kansas; A. B. Stone, W. H. Harris, Amos Stone and Henry Chisholm, of Ohio.

*Central Vermont*.—The St. Albans (Vt.) *Messenger* says: "It is reported—correctly, without doubt—that Joseph Clark, of Milton, and Lawrence Barnes, of Burlington, have declined to accept the election in the Smith board of Central Vermont Railroad directors, and that the vacancies have been tendered to Jed P. Clark and Luke P. Poland."

*Little Rock & Fort Smith*.—Mr. James Eblin, formerly of the Mississippi & Tennessee, has been appointed Master Mechanic in place of Mr. D. M. Wing, resigned. Mr. Theodore Hartman is Superintendent.

#### PERSONAL.

—Mr. Wm. G. Cook, for many years a director of the Camden & Amboy Railroad Company, died June 19 in Trenton, N. J., of which city he was a resident and a very large owner of real estate.

—John Miller, Secretary of the Contract & Finance Company (which built the Central and is building the Southern Pacific), was arrested recently in Maryville, Cal., charged with a defalcation for a large amount. How large the deficit is is not known.

—Mr. Charles W. West has resigned his position as Vice-President and director of the Cincinnati, Hamilton & Dayton Company.

—Mr. Edward F. Gay, who was a member of the corps of engineers who surveyed and located the railroad between Philadelphia and Columbia, in 1829-30, and for many years has sustained a high reputation in his profession, died in Philadelphia recently, aged 72 years. He was for several years President of the Philadelphia & Erie, which position he resigned on account of failing health.

—Mr. Morgan W. Torrance, who recently resigned his position as Superintendent of the Western Division of the New York Central & Hudson River road, has been presented by the employees of that division with a certificate of deposit for \$1,000 as a testimonial of their regard.

#### TRAFFIC AND EARNINGS.

##### Flour and Grain Movement.

Receipts and shipments for the week ending June 12 are reported as follows, flour in barrels and grain in bushels:

Flour:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	704,181	122,259	Dec..	18,078 14.8
" " shipments.....	110,652	115.5 2	Dec..	4,800 4.2
Atlantic ports' receipts.....	217,910	204,118	Inc..	13,792 6.8
<b>Wheat:</b>				
Lake ports' receipts.....	962,820	1,660,928	Dec..	698,108 42.3
" " shipments.....	1,910,904	1,685,345	Inc..	225,559 13.0
Atlantic ports' receipts.....	1,797,122	2,620,548	Dec..	823,426 31.4
<b>Grain of all kinds:</b>				
Lake ports' receipts.....	2,062,200	3,785,257	Dec..	1,677,057 46.9
" " shipments.....	2,965,232	3,827,590	Dec..	932,358 29.9
Atlantic ports' receipts.....	3,002,150	4,878,091	Dec..	1,876,541 38.5

Of the total grain shipments eastward from lake ports for the week 28.8 per cent. was by rail.

##### Coal Movement.

Coal tonnages are reported as follows for the week ending June 12:

	1875.	1874.	Inc. or Dec.	P. c.
Anthracite.....	309,912	418,567	Dec..	108,655 26.0
Semi-bituminous, Broad Top and Clearfield.....	25,354	.....	.....	.....
Cumberland, Barclay.....	68,185	.....	.....	.....
Bituminous, Barclay.....	7,184	.....	.....	.....
" " Western Pa.....	31,112	.....	.....	.....
" " West Va.....	5,339	.....	.....	.....
Coke, Western Pa.....	16,297	.....	.....	.....

The coal tonnage of the Pennsylvania Railroad and branches for the first week in June was:

Anthracite, tons.....	14,879
Bituminous.....	59,146
Coke.....	16,297
Total.....	90,322

##### The Delaware Fruit Traffic.

At the recent spring meeting, the Delaware Peach Growers' Association, in making an estimate of the crop for 1875, was of opinion that not less than 6,000,000 of baskets will be gathered, 4,000,000 of which, it is probable, will be transported by rail and 2,000,000 by water. In view of the prospect of a large crop, a resolution was adopted to the effect that freight should be largely reduced, new markets opened, and none but choice fruit shipped. Arrangements have been made to send cars through to Boston by way of Philadelphia, the North Pennsylv.



van, Lehigh Valley and Erie roads to Binghamton, the Albany & Susquehanna to Albany and the Boston & Albany thence eastward. This route avoids the transshipment heretofore made at New York, which injures the fruit more than many miles of extra travel.

#### Railroad Earnings.

Earnings have been reported by the following companies:

Year 1874:	1874.	1873.	Inc. or Dec.	P. c.
Ft. Wayne, Jackson & Saginaw.....	\$282,882	\$303,666	Dec. \$20,784	8.3
Expenses.....	163,603	178,167	Dec. 14,561	8.3
Net earnings.....	\$119,276	\$130,499	Dec. \$11,223	8.6
Earnings per mile.....	2,829	3,087	Dec. 258	8.3
Per cent. of expenses.....	57.84	57.72	Inc. 0.12	0.2
Petersburg.....	\$240,145	.....	.....	.....
Expenses.....	136,772	.....	.....	.....
Net earnings.....	\$103,373	.....	.....	.....
Earnings per mile.....	2,929	.....	.....	.....
Per cent. of expenses.....	56.95	.....	.....	.....
Year ending February 28:	1874-75.	.....	.....	.....
Vicksburg & Meridian.....	\$421,893	.....	.....	.....
Expenses.....	291,805	.....	.....	.....
Net earnings.....	\$130,088	.....	.....	.....
Earnings per mile.....	3,014	.....	.....	.....
Per cent. of expenses.....	69.17	.....	.....	.....
Five months ending May 31:	1875.	1874.	Inc. or Dec.	P. c.
Midland of Canada.....	\$94,162	\$106,793	Dec. \$12,631	11.8
Month of April:	.....	.....	.....	.....
Georgia.....	\$93,080	\$91,764	Dec. \$1,316	3.8
Expenses.....	43,707	103,084	Dec. 59,377	54.7
Net earnings or deficit.....	\$49,373	\$6,320	Inc. \$43,053	465.5
Per cent. of expenses.....	50.19	106.53	Dec. 56.34	52.9
Missouri, Kansas & Texas.....	200,339	203,361	Dec. 3,022	3.9
Peoria & Rock Island.....	21,265	.....	.....	.....
Expenses.....	22,118	.....	.....	.....
Deficit.....	\$853	.....	.....	.....
Per cent. of expenses.....	104.01	.....	.....	.....
It should be mentioned that the Peoria & Rock Island expenses include \$3,312 car-rent accumulated in previous months, so that the actual expenses of the month were 88.43 per cent. of earnings.	.....	.....	.....	.....
Month of May:	1875.	1874.	Inc. or Dec.	P. c.
Georgia.....	\$64,366	\$76,471	Dec. \$12,105	17.1
Expenses.....	47,773	73,573	Dec. 25,764	35.0
Net earnings.....	\$16,593	\$2,994	Inc. \$13,599	465.5
Per cent. of expenses.....	74.22	95.16	Dec. 21.84	22.8
Peoria & Rock Island.....	31,389	.....	.....	.....
Expenses.....	33,578	.....	.....	.....
Deficit.....	\$2,189	.....	.....	.....
Per cent. of expenses.....	106.97	.....	.....	.....
Rockford, Rock Island & St. Louis.....	\$58,912	.....	.....	.....
Expenses.....	54,572	.....	.....	.....
Net earnings.....	\$4,340	.....	.....	.....
Per cent. of expenses.....	92.63	.....	.....	.....
First week in June:	.....	.....	.....	.....
Denver and Rio Grande.....	\$8,517	\$8,317	Dec. \$200	1.9
St. Louis, Iron Mt. & So. ....	72,583	57,666	Inc. 14,917	25.9
First 15 days in June:	.....	.....	.....	.....
Union Pacific.....	\$483,009	\$364,538	Inc. \$118,471	32.5

#### THE SCRAP HEAP.

##### Railroad Manufactures.

The Passaic Rolling Mills at Paterson, N. J., are running double turn and employing 400 men. Besides bridge and shape iron for the Watson Manufacturing Company, the mills have been turning out some very large and heavy beams for the new Capitol building at Albany, N. Y.

The Ohio Falls Car Works at Jeffersonville, Ind., have turned out two reclining chair parlor cars for the Indianapolis, Bloomington & Western.

The Indianapolis Rolling Mill has contracted to make for the Jeffersonville, Madison & Indianapolis road new iron rails sufficient to relay seventeen miles of track, the rails to be furnished as fast as the company needs them, between this and November 1.

The rolling mill of the Blandon Iron Company at Blandon, Pa., has resumed work, having been idle since February last owing to a strike of the puddlers. The puddlers now employed are new men and the strikers endeavored to drive them off by force, but were dispersed by the authorities.

The Danville (Pa.) Iron Works started up last week.

The Delaware Bridge Works, of which Mr. Charles Macdonald is President, is building the bridge over the Genesee River at Charlotte for the Lake Ontario Branch of the Rome, Watertown & Ogdensburg road. The bridge consists of a double track draw-span 310 feet long and 1,000 feet in length of wrought iron viaduct, part of which is 60 feet high. The same company has just completed the extension of the New York Elevated road to Thirty-sixth street, and is building a draw for a highway bridge in Boston.

The Jacksonville (Ill.) car-works, that have been idle for more than a year, will commence work again soon.

The Ohio Falls car-works increase their force next week, they having secured several large contracts recently for building box-cars.

The Columbus (O.) Rolling Mills have a contract for 3,000 tons of iron rails for the Indianapolis, Bloomington & Western road.

Arrangements have been completed for the removal of the machinery of the Decatur (Ill.) Rolling Mills to Kansas City. The shops are to be located at Rosedale, Kan., on the Missouri River, Fort Scott & Gulf road a few miles from Kansas City. Mr. A. B. Stone, of Cleveland, is the President of the new concern, and Col. W. H. Harris, Vice-President and General Manager.

The Keystone Bridge Company has just completed the draw of the bridge over the Raritan on the New York & Long Branch road. It is 472 feet long and has two clear openings of 200 feet each. The draw is worked by two steam engines of 8x12 inch cylinders, and it takes about three minutes to swing it.

The Pittsburgh Locomotive Works recently delivered two heavy 32-ton freight engines to the Indianapolis, Peru & Chicago road.

##### Pullman Chair Cars.

A Pullman "reclining chair car" was exhibited by an excursion on the Michigan Central Railroad at Chicago last week, being of pattern similar to those which have been run for a year past on the New York & Washington limited express. The chairs are revolving, with high backs, so arranged that they can be inclined at any desired angle by means of a lever under the seat, which can be reached by the occupant's hand. There is a support for the feet and a cushion for the head, so that sleeping in one's seat becomes an easy matter. The car exhibited had an arrangement for ventilation, by opening the upper end of the window, where a wire screen sifts out the dust, the whole opening being above the level of the head. There are wash-basins at each end, as in other Pullman cars, and the whole is fitted in the luxurious and costly manner characteristic

of this company. One of the cars is to be attached to the day express on the Michigan Central between Detroit & Chicago, with a charge of a dollar per chair for the 284 miles. It is reported that the Midland Railway, of England, which has for some time past had Pullman sleeping cars, has ordered 40 of these chair cars, which will do very well for night as well as for day trains. They are very much lighter than the sleeping cars—an advantage which the public may not care much for, but which the railroad companies by this time know how to appreciate.

The Pullman shops in Detroit now give employment to about 1,000 men, and the company has now a branch shop at Derby, England. It is said that the cars made at Detroit for the Midland Railway would have cost about \$400 more than they did if made in England.

##### Vose, Dinsmore & Co.

This well-known firm has recently sold out its general railroad supply business to Messrs. L. G. Tillotson & Co., of No. 8 Dey street, New York. Vose, Dinsmore & Co. will devote their whole time hereafter to the manufacture and sale of car springs, in which department they have already established so large a business and acquired so high a reputation.

##### Checks Outside.

The Los Angeles (Cal.) Star says: "They tell a tough story about a new baggage man on one of our local trains. He was told to pile up the trunks in a baggage car, and be sure to hang the checks on the outside. The literal-minded youth piled up the trunks, and then took off the checks, with the leather straps attached, and hung them up on the outside of the car. The baggage master at the depot was driven nearly frantic by the passengers per the Orizaba attempting to identify their boxes."

##### Long Wear of Tires.

Mr. Wm. Fuller, General Master Mechanic of the Atlantic & Great Western Railroad, writes as follows under date of May 8:

"As an item of interest worth mentioning in connection with service of locomotive tires, I would say that we have just turned off a set of 5½ feet Krupp tires for engine No. 108, which have run since last turning 145,981 miles. The average wear of the tires was 25-28 inch; greatest wear of any one, ¼ inch; least wear, 5-32 inch."

#### OLD AND NEW ROADS.

##### Michigan Central.

Within the past six months 1,200 tons of steel rails have been laid on the main line and on the Air Line Division. All but 25 miles of the main line is now laid with steel.

##### Texas, Mississippi River & Northwestern.

The long break made by high water in the Pine Bluff line has been repaired, and trains are running regularly again between Chicago, Ark., and Pine Bluff.

##### Waukon & Mississippi.

Work has been begun on this narrow gauge road which is to run from Waukon, Ia., to the Chicago, Dubuque & Minnesota at Johnport.

##### Cairo & St. Louis.

After the completion of the road to Cairo, Payson & Co., the contractors, applied to the board of directors for the issue to them under the contract of \$1,500,000 stock, in addition to \$2,300,000 already held by them. Their claim was approved by the agent for the bondholders. The board voted to accept the road conditionally and to issue \$1,000,000 stock, giving the contractors \$3,300,000 in all. The whole amount authorized is \$5,000,000, of which \$500,000 is held back, and all or nearly all the rest belongs to the towns and counties which subscribed to the road. At the approaching annual meeting the contractors can elect their own board, and there is some uneasiness among the county stockholders in consequence.

##### Fredericksburg & Gordonsville.

A suit is now in progress between the old company, which came into possession of the road upon the failure of its successor, the Fredericksburg, Orange & Charlottesville Company, to complete it, and the bondholders, who claim possession of the property. It has been argued recently in the Virginia Circuit Court.

##### Central, of New Jersey.

Mr. E. G. Brown, of Elizabeth, N. J., has the contract for rebuilding the long pile bridge over Newark Bay, from Elizabethport to Bergen Point. The bridge, which is two miles long will be rebuilt in sections, so as not to interfere with traffic.

##### Burlington & Northwestern.

A preliminary survey has been made of several lines from Burlington, Ia., to Winfield, about 32 miles.

##### New York Central & Hudson River.

The Fourth Avenue Improvement in New York is so far completed that trains began to run over the new tracks their whole length from the Grand Central depot at Forty-second street to the Harlem River June 21.

The distance between the Harlem River and Forty-second street is about 4½ miles. The work of sinking the track was begun in the Fall of 1872, the contract being awarded to Messrs. Dillon, Clyde & Co. for \$6,395,070. The undertaking was under the supervision of a Board of Engineers consisting of L. C. Buckhout of the Harlem Railroad Company (who was also engineer of the Grand Central Depot) as Superintendent Engineer, with W. L. Dearborn as Resident Engineer and F. S. Curtiss as Principal Assistant and four division assistants. The work has been carried on uninterruptedly until the present time, although Mr. Buckhout died some months ago.

The trains going out from the station at Forty-second street take the west track, and those arriving come in on the east track, thus making the trains pass to the left instead of to the right, as the law directs. Hence there is a necessity of the tracks crossing each other. This they do at Fifty-third street in the form of a letter X, and not by gradual approach. After leaving this place, the tracks soon run into the first tunnel, which begins at Fifty-sixth street, and is of the kind known as "beam" tunnels; that is, the roof is composed of flat iron beams, filled in with brick work. South of this tunnel the tracks are crossed at the intersections of the streets with iron bridges, some of which are only for foot passengers, the majority, however, being roadways for carriages as well. The first beam tunnel extends to a point a little south of Sixty-seventh street, where the arched-roof tunnel begins. The arch-roof tunnel extends a little beyond Seventy-first street. The old rock tunnel begins at Ninety-second street and extends to Ninety-fourth street, leading directly to the viaduct crossing the Harlem flats, which is 4,563 feet long. At its greatest height, which is at One Hundred and Fourth street, it is 31 feet 1 inch above the street grade. The viaduct is built on piles, of which 198,000 were driven in the soil until a hard bottom was reached. Midway between One Hundred and Fiftieth and One Hundred and Sixtieth streets this viaduct ends and leads again into an open cut, the land adjoining rapidly rising. This cut extends through the Harlem River.

The tracks from Forty-second street to the Harlem River are—or will be when the work is completed—almost perfectly straight, but the grade through the various tunnels and cuts

varies considerably. At Fifty-sixth street the tracks are 13 feet 6 inches below the avenue grade, at Sixty-second street 25 feet below, and at Ninety-sixth street 27 feet below.

Although at present only two tracks are laid, it is intended to have four tracks. For the additional tracks on each side of the main tunnels a smaller tunnel is built. When these tracks are completed, which, it is expected, will be in September next, local rapid transit trains are to be run, and it is anticipated that the trip between the Grand Central Station and Harlem will be made in eight minutes. The local trains will be run through the side tunnels. Station houses will be constructed at Fifty-ninth street, at Seventy-second street, Eighty-sixth street, One Hundred and Tenth and One Hundred and Twenty-fifth streets.

##### Toledo, Peoria & Warsaw.

The Burlington Hawkeye says: "The company is now using the track of the Burlington & Carthage road from Iowa station to the east end of the bridge for which it pays a heavy rental. The stockholders of the road have organized a company in New York city to build the new extension, and Receiver Hopkins has been granted authority by the courts to lease the new road at a fair rental, to run the trains into this city. The route has already been surveyed, and the cost is estimated at \$80,000. The first few miles of the extension require but little grading—the last three or four miles, approaching the bridge, is the most expensive section. The road is to be built this year, and as the distance is about eight miles, the company will make a short job of it as soon as the work is once under headway."

##### New Jersey Midland.

The Paterson Press says: "Under Receiver Hobart's management the finances of the New Jersey Midland Railway are steadily improving and the floating debt is being reduced. There are large accumulations of rentals due for leased lines, engines and cars, besides \$20,000 or \$30,000 due for right of way, and it will take a long time to liquidate all these arrearages of obligations. If it were not for them, the road would not only pay its current expenses but a surplus as well. Mr. Hobart is aiming to make the employees contented, by paying them with the utmost promptitude, and to satisfy the road's patrons by giving them convenient trains run on time. The roadbed has been greatly improved this season, and next month the gravel train will be put on, with 40 men, and the road ballasted, trestles filled in, etc."

##### Illinois Central.

The Land Department reports for May sales of 1,227.79 acres construction lands for \$9,308.80; 160 acres free lands for \$2,056, and town lots for \$200. The cash collected on land contracts was \$14,185.09.

The Traffic Department reports earnings for the month as follows:

	1875.	1874.	Inc. or Dec.	P. c.
In Illinois, 707 miles.....	\$437,302 23	\$499,567 59	Dec. \$62,265 36	12½
In Iowa, 402 miles.....	147,461 10	121,485 28	Inc. 25,975 82	21½
Total, 1,109 miles.....	\$584,764 13	\$621,052 87	Dec. \$36,288 76	6½

##### Utica, Ithaca & Elmira.

The Ithaca Journal states that Cornell University trustees have withdrawn opposition to the designation of a line down the hill in Ithaca for this road. The route which has been settled upon is to run between the grove and the gymnasium building, crossing the university road on grade. Arrangements will probably be at once perfected for the construction of the road.

##### Fall River.

In another week about all the grading on this road will be completed. The road-bed is now ready for ties and rails from its junction with the New Bedford Railroad to west of the new county road.

At the crossing of Fresh River, in Dartmouth, there is to be a pile bridge 100 feet in length, which will be commenced as soon as the road-bed is completed to that place, over which a pile-driver and engine are to be taken. Track-layers are now at work putting down the rails.

##### Gilman, Clinton & Springfield.

A bill has been filed by Thomas A. Scott and H. J. Jewett, trustees, in the Bloomington (Ill.) Circuit Court, asking that they may be put in possession of the road under the terms of the mortgage and that the mortgage be foreclosed. They also ask the Court to dispossess the receiver appointed by the McLean Circuit.

##### Boston, Hartford & Erie.

The Massachusetts Supreme Court has issued a final decree directing the transfer of the Boston, Hartford & Erie Railroad to the New York & New England Railroad Company. A similar decree has been passed in the cause between the same parties in Connecticut, and a petition for the same has been filed in the cause in Rhode Island.

##### Georgia Railroad Taxation.

The Georgia Supreme Court has reversed the decision of Judge Hopkins, of the Fulton Superior Court, in regard to taxing the Western & Atlantic Railroad, the Georgia Railroad, and the Augusta & Waynesboro Railroad, and holds that the roads are only liable to a tax of 1½ per cent. on the net earnings. The Court holds that the Central Railroad and the Southwestern Railroad must pay the tax levied, and sustains Judge Hopkins' decision in regard to these roads.

##### Northern Pacific.

A general convention of bondholders has been called to meet in New York, June 30.

##### Intercolonial.

The work of changing the gauge of this road from 5 feet 6 inches to 4 feet 8½ inches was begun June 18, at daylight. It was expected to be complete by June 20.

##### New York & Long Branch.

The formal opening of this new road was to take place June 25, when an excursion train carrying the President of the United States and other distinguished persons was to pass over the line. Regular trains will begin to run June 28. Work has been begun on the depot at Long Branch, which is to be 175 feet long and to cost \$20,000. The contractor is Mr. H. W. Wilson.

The junction with the Central of New Jersey at Elizabethport, N. J., is 10½ miles from Jersey City. The stations on the new line with the distances from Jersey City are: East Rahway, 16.21 miles; Woodbridge, 19.11; Perth Amboy, 22.17; South Amboy, 24.10; Cheesequake, 25.75; Mattawan, 29.32; Holmdel, 31; Middletown, 35.24; Red Bank, 39.06; Oceanport, 41.42; Branchport, 43.69; Long Branch, 45.02.

##### Union Pacific.

The New York Tribune has published a list of stockholders taken from the company's books, from which it appears that the 367,450 shares are held by 323 persons, of whom 12 hold over 5,000 shares, 33 between 5,000 and 1,000 and the remaining 168 less than 1,000 and over 100, and 110 less than 100 shares each. As was to be expected with a stock so largely dealt in, very many of the shares stand in the name of bankers and brokers. The holders of over 5,000 shares are: Oliver Ames, 22,577; Ezra H. Baker, 9,254; Sidney Dillon, 26,620; Jay Gould, 100,100; Samuel Hooper & Co., 6,352; Jameson, Smith & Cutting, 8,500; Edwards King, President, 5,000; Leonard, Sheldon



& Co., 8,510; S. M. Mills & Co., 33,330; C. J. Osborn & Co., 23,100; Royal E. Robbins, 5,500; E. Sweet & Co., 7,200.

#### Breakwater & Frankford.

The extension of five miles from the Delaware line near Selbyville southward to a junction with the Wicomico & Pocomoke road near Berlin, Md., is completed, and trains run through regularly from Georgetown, Del., to Snow Hill, Md., the southern terminus of the Worcester Railroad.

#### Paris & Danville.

This road is now completed to the town of Robinson, in Crawford County, Ill., which is 11 miles south by west from the last point noted (near Hutsonville) and 80 miles from the northern terminus at Paris. The road was completed June 10.

#### Toledo, Wabash & Western.

The Court has empowered the Receiver to keep separate accounts for the leased lines; to modify existing contracts for use of tracks, depots or bridges; to defend suits begun prior to his appointment; to make arrangement to capitalize the rents due under the old contract with the Michigan Southern & Northern Indiana, and to pay rental due on cars owned by the Wabash Equipment Company.

The trains of the Pekin Division began to run to Peoria June 13. Two express passenger trains are run daily.

#### Grafton & Southern.

This projected narrow-gauge road is to run from the Baltimore & Ohio at Grafton, W. Va., southward. The surveys are completed to Philippi, in Barbour County, and are being extended to Beverly, in Randolph County. It will run through a country rich in coal, iron and timber, and will serve the farming sections of Tygart's Valley, the Buckhannon Valley and the Middle Fork.

#### Atlanta & Richmond Air Line.

In the foreclosure suit of Wilbur and others in the United States District Court at Atlanta, recently, it was ordered that said case be referred to Julius M. Patton, as special master, who will examine and report upon the following matters:

1. The number, character and description of the outstanding bonds of the defendant, the Atlanta & Richmond Air-Line Railway Company, the amount of interest due on the same, the names of their present holders, with the number and description of the bonds held by each, and the deeds of trust, mortgages, or other instruments by which any of said bonds are secured.

2. The other liens or encumbrances existing, or claimed upon any of the property of said company, their amount, their validity and their dignity in relation to each other and to those mentioned in the first paragraph of this order. Said master is empowered to take testimony by deposition, under commission, and orally, according to the practice of the court in equity cases; and for that purpose he is required to sit in Atlanta, Ga.; in Charlotte, N. C.; in Richmond, Va., and in the city of New York.

In the same cause another order was taken, extending the time for taking testimony until September 1.

#### Erie.

Suit has been begun for the foreclosure of a second mortgage on the Buffalo, New York & Erie, now the Buffalo Division of this road. It appears that the principal of these bonds fell due in 1872, and that all but \$32,000 of the bonds were exchanged for new consolidated bonds of the company. Mr. Wm. H. Willis, who owns \$7,000 of the bonds, brings the suit, the trustee having lately died.

The order made by the New York Supreme Court on application of the trustees under the fifth and supplemental mortgages and the consolidated mortgages of 1870 and 1874, directs that the authority of Hugh J. Jewett, to operate the road of the defendant, the Erie Railway Company, as Receiver of the same, be also possessed by him in this suit, and as Receiver under the mortgages mentioned in the complaint in this suit so far as the same affect the mortgaged property, rights or franchises, therein mentioned. To preserve in possession and keep in good condition and repair said road and property and protect title, and that he pay the interest as it becomes due on bonds secured by mortgage prior to said fifth mortgage. That said Receiver file a bond (for faithful discharge of his duties) in the sum of \$500,000, with sureties approved by a justice of the court. That as soon as practicable after entering upon the discharge of his duty, the Receiver file an inventory under oath.

The order then directs that the Receiver shall keep proper accounts as directed in the order appointing him Receiver of the Erie Railway Company. That James C. Spencer be appointed referee to pass his accounts from time to time.

#### The Illinois Railroad Law.

The test case brought against the Toledo, Wabash & Western Company in the Morgan Circuit Court at Bloomington, Ill., has been on trial for several days past. After a long argument on both sides, the Judge decided that the schedule of rates prepared by the Railroad Commission should be allowed to go to the jury as evidence, as provided in the law.

#### Richmond & Mecklenburg.

This company was organized at Chase City, Va., June 5. The stockholders directed the board to apply to Richmond for aid, and to open correspondence with the Richmond & Danville Company.

#### Grand Trunk.

There are reports of negotiations for a pooling arrangement and division of business with the Great Western. There are also rumors that the contest between the two companies is about to break out again.

#### Farmer's Union.

Contracts for grading 12 miles of this road from Liscomb, Ia., eastward have been let. The contractors are: W. J. Edwards, 4 miles; Wm. Goodrich, 2 miles; Wm. Boyer, 2 miles, and the balance in short sections. Work on all is to be finished by August 1. The bridge work has been let to Noyes & Hayden of Steamboat Rock, Ia., and J. W. Tripp will furnish the ties.

#### Chicago, Clinton & Western.

The contractor is proceeding with the work on this road at a rapid rate. Tracklaying has been commenced and a construction train has been set at work.

#### Flint & Pere Marquette.

The Detroit *Tribune* says: "On and after June 28 the passenger trains to Flint, Saginaw, etc., over the Flint & Pere Marquette Railroad will be run from and to Detroit over the Michigan Central Road to Wayne, instead of over the Detroit & Milwaukee Railroad via Holly, as at present. All trains will then depart from and arrive at the Central depot. The trains will be made up separate and distinct from those of the Central, and will run through on regular time."

#### Alabama & Chattanooga.

A letter from Montgomery, Ala., states that J. C. Stanton has been appointed temporary Receiver of the road; that R. H. Smith, attorney of the bondholders, and J. C. Stanton were appointed commissioners to settle the debts, claims and receiver's certificates, etc., and in case they cannot agree, Mr. Dodd is to be third commissioner.

#### Hot Springs Branch.

The Little Rock (Ark.) *Gazette* says: "The right of way of the Hot Springs Branch is cleared 14 miles, grade extends 9 miles, timber out for bridges and culverts 12 miles iron will

commence coming next week, locomotive will arrive July 1, trains will run the last of September."

#### Knoxville & Charleston.

The bridge at Little River has been rebuilt and other repairs completed. After a long suspension trains are again running regularly between Knoxville, Tenn., and Maryville.

#### Lake Erie & Ohio River.

This company has filed articles of incorporation with the Secretary of State of Ohio. The capital stock is to be \$250,000.

The proposed line is from Painesville, O., southward to Steubenville, through Lake, Geauga, Trumbull, Mahoning, Columbiana, Carroll and Jefferson counties.

#### New York & Canada.

Daylight was let through the Port Henry tunnel, the last on the line, June 12. The work is proceeding rapidly.

#### Rochester & State Line.

The Common Council of Rochester has authorized an exchange of bonds with this company, whenever a guarantee, to be approved by the Council and the Mayor, shall be given for the completion of the road, within the time limited by the act.

It is said that the Rome, Watertown & Ogdensburg Company is desirous of connecting its line with this road. This could be done by a branch six miles long from Charlotte, N. Y., to Rochester.

#### Washington & Ohio.

At a recent meeting in aid of this road the President stated that if parties would raise \$20,000 the road would be put through to the Snickersville depot, and with \$20,000 more to the summit of the Blue Ridge, in Clarke County. About \$5,000 of the bonds of the company were subscribed for at the meeting, and more is hoped for soon. The President stated that a recent survey had demonstrated that a line can be had over the Blue Ridge, at a grade of 200 feet, without increasing the length over the contemplated tunnel line, which must wait for better times and the certainty of reaching the great coal and iron fields.

#### New Orleans, Mobile & Texas.

The recent decision of the United States Circuit Court in the suit of Frank M. Ames, trustee, against S. B. Cole and others, confirms the title of the road in the trustee.

There is said to be a general feeling in New Orleans against accepting the proposition recently made for a reorganization of this company and the completion of its Texas line. The object now aimed at is a new and independent line.

#### Illinois & St. Louis Bridge.

At the new union depot in St. Louis 53 passenger trains now arrive and depart daily, of which 51 cross the bridge and seven are on the Atlantic & Pacific and Missouri Pacific roads, the only ones west of the river which use the new depot.

#### Texas Western.

Tracklaying has been begun at Houston, Tex., and the first section of ten miles will be finished in a short time.

#### New Orleans Pacific.

The movement in New Orleans for the completion of a railroad connection with Texas has taken form so far that a company has been organized under this name. The plans are not definitely settled as yet, but a road on a more northerly line than that formerly proposed and running to Dallas instead of Houston seems to be contemplated. This company seems to be distinct from the Louisiana Pacific, whose organization was recently noted, and which proposes to build a line to Shreveport.

#### New York Elevated.

This company will receive at its office, No. 7 Broadway, New York, about 2 p. m. of July 7, sealed proposals for the construction of about 1½ miles of single-track railroad, with two or more turnouts, extending from the northern terminus of the present road at Thirty-sixth street to opposite Central Park at Sixty-first street. The principle of the structure will be similar to that portion of the company's road recently constructed between Thirty-fourth and Thirty-sixth streets. There will be six spans to each block, averaging about 36 feet, one over each 60-foot street of about 45 feet, and one over each 100-foot street of about 60 feet in length. The extreme lengths will not probably exceed 40, 50 and 60 feet respectively. Calculations for the strength of columns and girders must be based upon the extreme lengths—40, 50 and 60 feet. Special provisions to be made for spans of greater length, should such be necessary. The spans will be made of uniform lengths so far as practicable. The company will put in the foundations and castings ready to receive the columns.

The columns will be what is known as the "cluster column," composed of four wrought iron posts, I beam pattern, six inches in depth, flanges five inches broad, weight of each post for 40 feet spans and under about 30 lbs. to the lineal foot; for spans longer than 40 feet, (the columns at the corners of the streets), about 40 lbs. to the lineal foot, properly proportioned to give the required weights, and connected together at suitable intervals in order to prevent vibration of the separate posts, and secure their combined strength. The posts constituting these columns will be set into cast iron sockets (furnished and placed in position by the Company), extending two to three feet below the surface of the sidewalk, the spaces around which to be filled with suitable material by and at the expense of the contractor. The girders will be a combination of angle iron with plate web or open lattice, the angle iron to be strengthened when necessary with compression and tension plates. If made with plate web they will not exceed 20 inches in depth in front of the blocks, nor 25 inches over the streets, the latter brought in to 20 inches on the seat. If open lattice they may have a uniform depth of not exceeding 25 inches. The strength of the members to be proportioned to the length of the spans, based upon the extreme lengths as heretofore mentioned.

The bottom of the girders will in no case be less than 14 feet above the sidewalks and streets over which they are placed. Cross-braces will be inserted between the girders to prevent lateral motion, and the girders are to be properly secured to the seats over the columns. The columns, girders, and all other members are to be of the best refined wrought iron, capable of a tension resistance of 60,000 pounds to the square inch. No member to be subject to a greater strain than 8,000 pounds to the square inch, gross section. Calculations to be based upon a maximum rolling weight of 800 pounds to the lineal foot, moving at the rate of 30 miles per hour. Proposals will state the price per pound, which will include all the material and workmanship for the structure complete in its place, and will cover the entire structure except the foundations mentioned and the track superstructure, by which latter is meant the rails, wooden ties, and guards and their fastenings; these will be furnished and put on by the Company. The price per pound is to cover one heavy coat of approved paint and color before being put in place. Parties may base their proposals upon a plan to be prepared by the Company, or plans of their own, by conforming to the requirements prescribed as to dimensions and strength. If based upon a plan of their own, which plan shall not in all respects prove to be satisfactory to this Company, but the proposal is in other respects acceptable, such proposal will not be precluded, provided such modifications or changes are made in the plan as will be satisfactory to the Company.

Contracts are to be entered into and the work commenced immediately after the allotment, and to be completed by October 1 next. The material, as fast as prepared, to be put in place, commencing at Thirty-sixth street, and finished ready

for the track superstructure continuously, so that the road may be made available as the work progresses. The Company reserves the right to let the work to such party or parties at its discretion, as under all the circumstances may seem to be to its interests, although not the lowest. All other considerations being considered equal, however, the lowest offer will be accepted. Payments will be made monthly on estimates of the value of the work done and material in place complete, reserving 10 per cent. as security for the proper performance of the contract until the completion of the whole work. A penalty will also be exacted for each day's delay in the completion of the contract after the time agreed upon for such completion has expired.

#### Dividends.

Dividends have been declared by the following companies: Rome, Watertown & Ogdensburg, 3 per cent., semi-annual, payable July 15. Georgia, 4 per cent., payable July 15. North Carolina, 6 per cent. Old Colony, 3½ per cent., semi-annual, payable July 1. Boston, Clinton & Fitchburg, 3 per cent., semi-annual, on the preferred stock, payable July 1. Philadelphia, Wilmington & Baltimore, 4 per cent., semi-annual, payable July 1. Illinois Central, 4 per cent., semi-annual, payable August 2. Lehigh Valley, 2½ per cent., quarterly, payable July 15. Iowa Falls & Sioux City (leased by Illinois Central), 1½ per cent., payable July 1. Chicago, Iowa & Nebraska (leased by Chicago & Northwestern), 4 per cent., payable July 1. Norwich & Worcester, 5 per cent., semi-annual, payable July 10. New London Northern, 2 per cent., quarterly, payable July 1.

#### Chicago, Milwaukee & St. Paul.

Mr. Julius Wadsworth, the new Vice-President, gives notice that the office of the company in New York has been removed to No. 68 William street, where transfers of stock will hereafter be made and coupons paid.

#### Dakota Southern.

A report that Mr. A. H. Morrison, formerly of the Chicago & Michigan Lake Shore, had bought a half interest in this road has been current, but is denied by Mr. C. G. Wicker, President.

#### New Mail Route.

Mail Service has been ordered over the Ashburnham Railroad, from Ashburnham Depot to Ashburnham Center, Mass., 2½ miles.

#### The Railroad War.

A conference was held in Philadelphia, June 19, between the agents of the Baltimore & Ohio and the Pennsylvania roads, when new freight rates were agreed upon. It is said that there will be no change in passenger fares, for a few days at least.

Later reports are that freight rates will not be increased to anything like the old figures. It is also said that the Michigan Central and the New York Central have interposed strong objections to an increase of the fare from Chicago to New York to \$22, which was proposed, and will not consent to anything over \$20. The passenger rates still continue unchanged.

The new tariff from Baltimore and Philadelphia on special class (sugar, coffee, salt, etc.) freight are: To Chicago, 18 cents per 100 lbs.; Cincinnati, 15; Indianapolis, 17; Louisville, 12; St. Louis, 28. The recent rates were: Chicago, 12 cents per 100 lbs.; Cincinnati, 12; Indianapolis, 15; Louisville, 20; St. Louis, 20.

#### Chicago, Dubuque & Minnesota.

A meeting of the bondholders of this Company and the Chicago, Clinton & Dubuque will be held at the Parker House, Boston, June 29, at 11 a. m. The report of the Committee of Investigation will then be presented and a full attendance is desired.

#### Meetings.

The following companies will hold their annual meetings at the times and places given:

Erie, at the office in New York, July 13, at 10 a. m. Gilbert Elevated, at the office, No. 149 Broadway, New York, July 7, at 12 noon.

#### Vermont Central.

As was expected, the foreclosure sale under the second mortgage, which was to have taken place June 22, has been postponed until August 31, by which time it is hoped that the United States Circuit Court will have reached a decision in the cases pending before it.

#### Keokuk & Des Moines.

The new line which this company is building from Buena Vista, Ia., to Vincennes is about 12 miles long and avoids the high grades on the old line. The new line follows the Des Moines River pretty closely for nearly the whole distance, and does not rise out of the valley at all, while the old road climbs up the bluff near Keokuk and then descends into the valley again. The new line has some heavy earth cutting and filling, including one cut 600 feet long and 66 feet deep. There are 17 pile bridges and one iron bridge of 120 feet span, at Sugar Creek. Mr. Tim Ford, of Keokuk, has the contract for the whole work, and has sub-let a portion of the grading. Mr. P. H. Butterfield is contractor for the pile bridging. The work is being pushed forward steadily.

#### Savannah & Charleston.

The South Carolina Supreme Court has set aside the decree of the Circuit Court on appeal, and has ordered that the road be put in possession of the Comptroller General of the State. This act will not affect the standing of the creditors, but it will put an end to the proposed sale of the road for \$1,500,000, which was authorized by the Circuit Court. This action is taken under the law of 1869. Comptroller General Dum will continue to operate the road and it is understood that Col. J. P. Low, of Columbia, will have immediate charge as his agent.

That portion of the road which lies in Georgia has been seized under an execution for \$50,000, and will be sold at Sheriff's sale July 6, unless some arrangement is made. It is thought that the case will be appealed to the Supreme Court.

#### Mexican Railroad Projects.

The *Trait d'Union*, dated at the city of Mexico May 30, says that within the previous two weeks Congress had passed the parts of the budget relative to granting subsidies to steamship lines, concerning railroads, as likewise an addition with reference to an excise duty as subsidy to the project for a railroad from Vera Cruz to Zamorana; and a supplementary credit of \$300,000 to be devoted to the Philadelphia international exhibition.

The contract made by the Minister of Public Works for the construction of a railroad from Guaymas to the Arizona frontier was ratified. On the 17th, the Committee on Industry reported favorably the contract made with Edward Lee Plumb, representing the International Railroad Company, of Texas, for the construction of a railroad from Leon to the Rio Grande. On the 29th, Congress was to consider it, and the *Trait d'Union* says that it "will be approved without any doubt, for our representatives fully understand the advantages which will accrue to the country from this great line of communication, the most important of all." A supplementary note says that the contract was approved by a vote of 116 to 13. This journal says that



Mexico, with such a road, can easily supply the whole United States with sugar and coffee, in competition with Cuba and Brazil; while the railroad connection would make it possible to prevent the pillaging on the Mexican border which now frequently threatens to disturb the peace of the two countries.

A project is talked of for a railroad from Jalapa to Coatepec, which produces coffee, sugar and cattle.

The Executive asks Congress to approve a contract which it has made with Jose Esperon & Co., for the construction of a railroad from a point on the Mexico & Vera Cruz line to Oajaca. The railroad from Vera Cruz to Jalapa is almost completed. The rails are laid to San Jose from Vera Cruz. Rails have arrived for a line between Vera Cruz and Zamorana.

#### Chester & Lenoir.

The arrangement made with Mr. George W. Melton, of Chester, to complete this road from Yorkville, S. C., to Dallas, N. C., has fallen through, owing to some differences as to the details of the contract.

#### North Carolina.

The change of gauge, from 4 ft. 8½ in. to 5 ft., of the section from Greensboro to Goldsboro, has been completed. The whole road, from Charlotte to Goldsboro, is now of 5 feet gauge.

#### The Green Line Railroad War.

The Executive Committee of the Green Line met in Atlanta, June 9, and after transacting the usual business appointed a committee of three to investigate the causes of the difference with the St. Louis & Southeastern road. The committee is to report to the next meeting, at Atlanta, Ga., July 2. This action was taken at the request of the board of directors of the Georgia Railroad Company.

#### Pacific, of Missouri.

The Supreme Court of the United States has given its decision in the suit brought to enjoin the collection of the taxes assessed upon this company for 1869. The decision was against the company, the Court holding that the provisions of the charter did not exempt the company, and that an alteration in the manner of assessment did not constitute any such alteration of the charter as would make a breach of contract. Further, the wording of the charter did not necessarily imply, as claimed by the company, the exemption of the property from all taxes except the State tax. Such a construction would be a harsh and forced one, and would not be favored.

#### Walla Walla & Columbia River.

Regular trains are now running from the Columbia River terminus at Wallula to the Touchet Station, and the road is in running order to a point about 11 miles from Walla Walla, W. T., and 19 miles from the Columbia. The road appears to be in course of reconstruction or rebuilding. It was originally, we believe, laid with old-fashioned strap rails.

#### Virginia City & Umatilla.

Two lines have been surveyed from Virginia City, Nev., to Reno, one by Washoe and Steamboat valleys, the other by Red Canon Creek. Both are said to be practicable, and both are about 30 miles long, or 21 miles shorter than the existing line, the Virginia & Truckee road.

#### European & North American.

This company, which has been known to be in embarrassed circumstances for some time past, has suspended payment. A full statement of its condition, assets and liabilities is being prepared, and will be submitted to the creditors at a meeting which will be called shortly.

The company was formed a little more than a year ago by the consolidation of the European & North American Company, of Maine, and the New Brunswick company of the same name. It owns a somewhat circuitous line from Bangor, Me., eastward to St. John, N. B., 205 miles, and it works under lease the Bangor & Piscataquis road, from Oldtown to Abbott, 54½ miles, and the Bucksport & Bangor road, from Bangor to Bucksport, 18½ miles. It was completed in 1871, after many difficulties and delays, and forms the connecting link between the Maine roads and the railroad system of the maritime provinces. The company has been carrying, ever since the completion of the road, a heavy floating debt, and, though no reports have been made, it is believed that the earnings have been too light to leave any surplus for its reduction. By the latest reports, which are not very recent, the bonded debt was \$3,000,000, besides \$721,000 Bangor & Piscataquis bonds assumed.

#### Rockford, Rock Island & St. Louis.

The Receiver reports to the United States Circuit Court net earnings in May of \$4,340.13, which added to the balance of \$32,495.93, on hand May 1, leaves a balance of \$36,836.06 on hand June 1.

Mr. Ferry further reports that, by the accumulation of joint earnings with the Chicago, Rock Island & Pacific Railroad, he has now to his credit with that company an amount sufficient to pay the track rental due it for July, September and October last. This he asks to be allowed to pay, and to credit it on his books. He has also, in pursuance of the order of Court, deposited with the clerk \$20,739.23 to satisfy the decree in favor of H. H. Porter for his balance and interest due on cars. Mr. Ferry winds up by asking the Court to allow him to appropriate \$1,000 for his services for the month of May.

In the United States Circuit Court, June 17, was delivered an opinion on the exceptions to the master's report in the case of the Union Trust Company, of New York, against this road. The objections to the master's report were in the main overruled, and the Court held that the mortgage of 1868 was a security for the first issue of bonds on all the road north of a point on the main line as ultimately constructed, due east from Burlington, and that this mortgage constituted a lien on the property for the payment of said bonds. Also, that the last mortgage of 1869, given for the security of all the bonds issued, covered the first issue as well as the second, and therefore gave the bondholders a double security.

The Court also held that as there had been a partial payment to some of the bondholders under contracts made after the date of the mortgages, by which it was proposed that all the bonds issued should be scaled down so as to make the sum total of the indebtedness much less than the original amount; that as those contracts had never been completely carried out by the consent of all the bondholders, and as some of them had received a small portion of their debt, that those who did not consent to such deduction on their bonds, and which circumstance prevented the consummation of the contracts, should be in no worse position as to their claim upon the assets of the defendant than those who had been partially paid. That where an indebtedness of the company had been paid in the usual course of business, or by suit, that circumstance did not prevent the parties obtaining such payment, if they had not other claims against the company, from standing upon an equality with other creditors in the same position as themselves.

#### Eastern.

The Boston Journal of recent date says: "Many improvements have been made by the Eastern Railroad Company during the past few weeks, and more are contemplated. A decided improvement has been made at the terminal depot in this city, which now presents almost an entirely different appearance internally than it did a month ago. The smoke and soot which had accumulated for years has been wholly removed, the walls whitened, the woodwork painted, and the ladies' and gentlemen's rooms renovated and frescoed. The platforms and the road-bed, in and adjoining the depot, have also received attention, repairs having been made and all dirt swept up and

removed. The offices of the company, up stairs, have been newly and tastefully rearranged, and each official now occupies a separate apartment.

"Work of repairing Oyster bridge over Mystic river, just east of the long bridge, has been going on for several weeks, and when everything is completed the bridge will be substantially a new one.

"The management of the road intend shortly to put on a freight train, which will leave Boston for Lynn daily via the Saugus Branch, and will return by the same route in the evening. This plan will prove a great convenience to residents along this Branch, and to facilitate the purpose, side tracks will be laid at all the large depots.

"In connection with the Saugus Branch the depot recently erected by real estate owners, between Saugus Centre and Cliftondale stations, and christened 'Pleasant Hills,' was yesterday presented to the Eastern Railroad, the deed of the property accompanying the presentation. The depot will prove very acceptable to the railroad, and trains will stop here as soon as the new time table goes into effect.

"The Hall electric signals governing the running of trains between Boston and Salem are working at present in a satisfactory manner, and the management of the road has the fullest confidence in their success."

#### Long Branch & Sea Girt.

A company by this name has filed its articles of association with the Secretary of State of New Jersey. The road is to be about five miles long, and will be an extension of the New York & Long Branch road from the last named place through Ocean Beach and Ocean Grove to Sea Girt. The capital stock is to be \$100,000, and the incorporators are J. Taylor Johnston, James Johnston, Samuel Knox, Henry S. Little and Anthony Rockless, who are all connected with the New York & Long Branch, or the Central of New Jersey.

### ANNUAL REPORTS.

#### South Carolina.

This company owns and operates the following lines:

	Miles.
Charleston, S. C., to Augusta, Ga.	137
Kingville, S. C., to Camden	65
Kingville, S. C., to Camden	97
Total	242

The equipment with which this road is worked consists of 41 engines; 23 first and 26 second class passenger cars; 399 box, 14 stock and 117 platform cars. Two freight and one shifting engines are under contract; four of the old ten-wheel engines are fit only for shifting work.

The capital account is as follows:

Stock (\$24,047 per mile)	\$5,819,375 00
Bonded debt (\$18,633 per mile)	4,509,089 91
Floating debt (\$5,474 per mile)	1,324,611 15
Total (\$48,154 per mile)	\$11,653,176 06

The main items of the floating debt are \$1,127,866 bills payable, \$70,000 special bills payable, on account of Greenville & Columbia loan, and \$95,069 fare tickets, which circulate as currency. The bonded debt has been reduced \$302,555.56 and bills payable have been increased \$144,149.12. The company holds steamship stocks which cost \$276,447.07, and railroad stocks and bonds costing \$297,795, a total of \$576,242.07.

The operations for the year ending December 31 were as follows:

	1874.	1873.	Inc. or Dec.	P. c.
From passengers	\$226,016 06	\$246,756 26	Dec.	\$20,740 20 8.4
Freight	1,121,779 93	1,221,239 63	Dec.	99,459 68 8.1
Mails	18,176 10	23,020 00	Dec.	4,843 90 21.0
Total earnings	\$1,365,972 11	\$1,491,015 89	Dec.	\$125,043 78 8.4
Operating expenses	850,115 42	914,650 57	Dec.	64,535 15 7.0
Net earnings	\$515,856 69	\$576,365 32	Dec.	\$61,008 63 10.8
Incident income	1,329 29	2,210 70	Dec.	881 41 30.8
Total net income	\$517,185 98	\$578,576 02	Dec.	\$61,390 04 10.7
Interest account	413,761 18	417,117 81	Dec.	3,356 63 0.8
Balance	\$103,224 80	\$161,558 21	Dec.	\$58,333 41 35.1
Gross earn. p. mile	5,644 81	6,153 00	Dec.	508 49 8.4
Net	2,129 99	2,292 00	Dec.	262 01 10.
Per cent. of expenses	62.26	61.34	Inc.	0.92 1.6

The work done was as follows:

	1874.	1873.
Train mileage	857,270	897,530
Passengers carried	171,118	183,697
Tons freight moved	270,378	294,784

Of the passengers carried 5,293 were through and 165,195 local. The quantity of the leading articles of freight received at Charleston was:

	1874.	1873.	Inc. or Dec.	P. c.
Bales cotton	343,786	328,904	Inc.	14,882 4.5
Barrels flour	72,659	62,067	Inc.	10,592 99.6
Barrels grain	218,427	148,319	Inc.	70,108 82.4
Bales domestic	25,294	28,024	Dec.	2,730 9.7
Barrels naval stores	49,956	50,381	Dec.	425 2.8
Head live stock	12,697	14,417	Dec.	1,720 12.6

There was a decrease in the receipts of cotton over the Augusta Division and a large increase from the Columbia and Camden divisions.

The average receipt per ton of freight was \$4.15; cost, \$2.36; net receipt, \$1.79. Of the total earnings 8.13 per cent. was from west-bound and 8.42 from east-bound passengers; 34.25 per cent. from west-bound and 47.97 per cent. from east-bound freight, and 1.33 for mails. The cost of engine service (excluding wages) was 14.23 cents per mile against 12.75 cents in 1873.

During the year the rebuilding of the long trestle across the Congaree swamp has been completed. The Y tracks at Camden, Kingsville and Aiken have been removed and turntables put in. There were used in repairs of track 1,222 tons of rails, 71,100 pounds of spikes, 42,397 pine and 83,705 cypress ties and 42 frogs. There are several parts of the road where the rails have been in use 10 and 12 years, and are becoming unserviceable; there will probably be needed 2,000 tons of rails during the coming year.

In calling attention to the very large proportion of local to through freight, the President's report says:

"And the most gratifying feature of the view we are presenting is, that of the large proportion of local business shown in comparison of through and local, our own lines and our own territory contribute so great a share.

"In this review of the statements, it has been matter of much interest to observe that of the entire freight earnings of the road, \$1,121,779.93, the large proportion, amounting to \$893,542.31, is furnished by points practically within our own control; and, not less, to note that the business derived from the Greenville & Columbia Railroad exceeds that done with the Georgia Railroad, and the entire system of connections west of Augusta in the large sum of \$94,204.62.

"These are facts which should be cause of satisfaction and encouragement to the Company, as indications that a large proportion of the business is comparatively free from the injurious effects to be apprehended from the reckless management of competing lines, whose frantic efforts to secure a share of the through business resulted in a reduction of rates for that business, to figures barely covering the cost of transportation. To develop and encourage the situation we have been

presenting to you, has been the policy of the board to the utmost extent of their ability since the war, and it is only owing to their want of means, that their favorite ideas of connecting with the South Carolina Railroad as a trunk, all the interior roads of the State, has only been partially accomplished. From what has been shown, it is readily seen, that such a combination including, with the Greenville, the Laurens, the Spartanburg & Union, and the Charlotte & Columbia Roads, would render us entirely independent of outside connections, the effort to obtain whose business entails expenses quite incommensurate with its value, and in a great measure relieve us from fluctuations of revenue inseparable from the reckless manner in which competition for our business at distant points is conducted—so conducted during a considerable portion of the business year, as to have forced rates of transportation upon leading articles down to mere cost of movement."

#### Baltimore & Potomac.

This company owns a line from Baltimore to Washington, 43 miles, and a branch from Bowie, Md., 26 miles from Baltimore, southward to the Potomac at Pope's Creek, 49 miles, making 92 miles in all.

The property is represented by the following securities:

Stock (\$38,076 per mile)	\$3,808,000
First mortgage bonds	3,000,000
" " tunnel bonds	1,800,000
Second mortgage income bonds	1,130,000
Total bonds (\$61,228 per mile)	\$5,638,000
Total (\$99,304 per mile)	\$9,126,000

The very high cost of the road is due largely to the tunnel and other expensive works by which an entrance into Baltimore and a connection with the Northern Central and Union roads is secured. The bonds are guaranteed by the Pennsylvania and Northern Central companies.

The equipment consists of 25 engines; 45 passenger and 10 baggage cars; 100 box, 50 stock and 116 gondola cars; one tool car.

Repairs of road during the last year required 27.2 tons steel and 130.66 tons of iron rails and 3,001 new ties. A contract has been made for 20,000 ties for the current year.

For the year ending December 31 the operations are reported as follows:

	1874.	1873.	Inc. or Dec.	P. c.
Earnings	\$615,415 36	\$381,536 73	Inc.	\$233,878 63 61.3
Expenses	484,908 46	381,466 80	Inc.	103,441 66 37.1
Net earnings	\$130,506 90	\$99 93	Inc.	\$130,436 97 ....
Gross earn. per mile	6,089 30	4,147 14	Inc.	2,542 16 61.3
Net earn. per mile	1,418 56	0 76	Inc.	1,417 80 ....
Per cent. of expenses	78.79	99.98	Dec.	"1.19 21.2

The net earnings last year were 2.3 per cent. on the bonded debt. The earnings and expenses for 1874 were divided between the two lines as follows:

	Earnings.	Expenses.	Net earn. or deficit.	Earn. p. Mile.	Per cent.
Washington Line	\$574,322 32	\$440,032 50	\$134,289 82	\$13,388 78.55	24.5
Pope's Creek Line	40,593 04	44,875 96	4,282 92	838 110.55	84.8
Total	\$615,415 36	\$484,908 46	\$130,506 90	\$6,089 78.79	24.5

The business done was as follows:

	1874.	1873.	Inc. or Dec.	P. c.
Passengers carried	738,623	629,377	Inc.	15,246 24.5
Tons freight hauled	161,314	87,305	Inc.	74,009 84.8

The great bulk of the business is through traffic over the Washington line. There is comparatively little way traffic on that line, and that of the Pope's Creek line is very small.

The President's report says: "The great and steady increase in the business of the road since its opening will be seen from the following statement of total earnings: 1872, from May, when it first commenced transportation, \$137,554.97; 1873, \$381,536.73; 1874, \$615,415.36.

"The returns for May cannot yet be furnished but for the four months ending April 30 last, the gross earnings over same period last year are \$8,469.61."

"It will be observed that the Pope's Creek line has been operated at a loss. This is owing to the failure of crops of all kinds in Southern Maryland since the opening of the road, which passes its entire length through a purely agricultural and sparsely settled country. It is believed, however, that with a more prosperous agricultural production, and the increased facilities recently given to encourage the small industries, and the cultivation of fruits and vegetables, for which the soil and climate of Southern Maryland is so admirably adapted, that this part of the road will also soon be made to pay a profit. A contemplated line of steamers from Pope's Creek, to accommodate which a wharf would have to be erected there, and a ferry line from the opposite Virginia shore which the wharf would invite, will add to this.

"The contract recently entered into with the Western Maryland, Northern Central and Union, by which the former company obtains the use of our tunnel at rates it can well afford to pay, and remunerative to us, and access to tidewater at Canton, with the great improvements there about to be made by the Northern Central and Canton companies, largely increase not only our tunnel receipts, but will attract freightage along the whole line of both roads, seeking shipment at Canton, and is of the utmost importance, not only to those interested in the roads, but to the commercial business of Baltimore. From the articles of coal, ore and iron alone, which the Western Maryland has been debarring transportation of by its remote depot facilities in Baltimore, our tunnel receipts must necessarily be very largely increased.

"A very strong effort is contemplated by the tobacco planters of the three counties of Southern Maryland, through which our road runs, to obtain the building of the recently-burned tobacco warehouses at Canton, that their tobacco, by going directly through the tunnel, may escape drayage and double handling both to the warehouses for inspection and from them for shipment, thus saving largely in expenses to both producer and shipper.

"The contemplated line of steamers from Canton must also add largely to the volume of our business."

#### The New York & Canada Railroad.

The following description of the heavy work on this road is condensed from an article in the *Plattsburgh* (N. Y.) *Herald*:

As the great work of constructing a railroad along the western rock-bound shores of Lake Champlain approaches completion, the stupendous nature of the job becomes more and more apparent. On the whole line, from Whitehall to the mouth of the Ausable River, great obstacles have been met with. Near the upper end of the lake, at a certain point near the shore, several "fills" sank successively out of sight into an apparently bottomless pit; at Putnam Point, opposite Benson Landing, were a series of very heavy rock cuttings; at Ticonderoga was a tunnel, and on the shores of Bulwaga Bay again was found heavy rock work. Then just below Port Henry there was much hard work in cutting through the rocks, and for four miles north of Port Henry is an almost continuous side cut along the solid wall of rock which forms the shore, commencing with another tunnel just north of the old furnace in the village. This four miles takes us to Mullen Brook, where the soil is again reached, and from which point for 21 miles the work is comparatively easy. But when this 21 miles is passed, the line, after winding down the valley of the Boquet River, suddenly strikes the head of Willsboro Bay, from which point, for seven miles north is



found, so old railroad men say, one of the hardest seven-mile sections ever encountered by a railroad company on this Continent.

As the line approaches the head of the Bay from the south a series of minor rock cuts are encountered, which, however, afford but a slight foretaste of what is to come, and then suddenly it strikes a huge mass of rock, which, however, is passed by a heavy thorough cut, flanked on either hand by side cuts. Then, coming north, a shelving rock is reached, from the foot of which at the water's edge a wall 250 feet long has been carried up thirty feet as a foundation for a "side fill." Then comes another side cut, then a lateral fissure into the mountain, across which is a deep fill, composed entirely of rocks from the side cut below and another heavy one just above. This brings us to the famous red rocks, so named from the stained appearance of their surface when viewed from the water.

Along the side of the red rocks is a cut 600 feet long, and right here has been the most difficult portion of the line to build. The first blow was struck at this point July 25, 1873. In order to get an idea of the appearance of this place, imagine a nearly perpendicular wall of rock 600 feet long and rising sheer from the very edge of the lake to a height of about 180 feet. Halfway up this cliff, or about 90 feet from the edge of the water, was where the track of the New York & Canada Railroad must be laid if it was laid at all, for back of the cliff the mountain rose to much greater height. At the foot of this precipice came the waters of Willabro Bay, and to give an idea of the shape of the rock below the water it is only necessary to state that 100 feet from the shore the water was found to be 210 feet deep. Well, the work was commenced a year ago last July half way up this cliff, and continued through that season, but during the winter of 1873-4, owing to the failure of a contractor, work was suspended, to be renewed the following spring, and now this wonderful shelf is nearly completed.

In prosecuting this work the most extraordinary difficulties have been met with and overcome. At one point the face of the cliff curved inward, and across this point it was contemplated to make a side fill for a portion of the roadbed, and thus save some hard blows. So hundreds of tons of rocks were dumped off the precipice into the water until the pile emerged from the surface of the water and began to creep hopefully up the cliff, when suddenly it sank down into the water and disappeared in the mysterious depths below, probably having slid down the submarine slope—nobody knows how many hundred feet. So this plan had to be abandoned, for the risk of a railroad train sliding down this steep place on an insecure roadbed could not be assumed on any consideration. Then the line was changed so as to bring the track 18 feet further into the mountain at this point. In changing this line it became necessary to go to the top of the cliff again and take off another slice 18 feet thick, and in doing this, at one point four holes were drilled in a line 18 feet back from the face of the cliff, and 14 feet deep. The distance between these holes was 15 feet each, thus the whole distance spanned being 45 feet. These holes were then charged lightly with nitro-glycerine and the charges exploded simultaneously. This made a slight crack in the rock. Then it was charged several times in succession in the same manner until finally a crack 30 feet deep and 100 feet long was made. \* \* \* Into this crack, 100 feet long and 30 feet deep, was then poured 30 kegs of blasting powder, and on the 8th of February, 1874, the charge was fired, and when it exploded the whole face of the rock—over 2,000 cubic yards—went overboard! All Essex County shook when that charge went off, and over the water at Burlington they thought there was an earthquake. This is not the heaviest charge that has been fired on the line, but it probably did the best execution.

Passing on to the northward of the Red Rock cut, another lateral fissure into the mountain is reached, across which a fill is being made—the material being of course, fragments of rocks, and just north of that we come suddenly to the tunnel.

A huge spur of the mountain projects so far forward here that in running the line there was no possibility of going around it by means of a cut, without making a shorter curve than is allowed on this road, and so there was no alternative but to make a tunnel. The southern entrance to this tunnel is very abrupt, and as you pass over the deep rock fill you are suddenly confronted by a dark opening in a cliff of almost pure felspar 60 feet high.

Passing out at the north end of the tunnel, we soon afterward abandoned the line of the track and climbed over the hill by a foot path to the office, which is situated near Higby's Gorge—a natural gulf almost as wonderful as the Ausable Chasm itself.

\* \* \* The walls of this gorge are 100 feet high by actual measurement, and the track is to cross it on an iron bridge the span of which will be 160 feet. Still further to the northward about two miles, is another very heavy rock cut, the deepest thorough cut on the whole section, it being 68 feet deep. This seven miles is on the south end of what is known as section No. 7, the sections being numbered from Whitehall. This section No. 7 extends from near the head of Willabro Bay to the Ausable River, No. 8 from Willabro Bay to Mullen Brook, and No. 5 from Mullen Brook to Port Henry.

The contractors on this section No. 7 are John Cameron from near the head of Willabro Bay 2½ miles north, including the Red Rocks, to the south end of the tunnel; Rogers & Kelly have the next three-quarters of a mile including the tunnel; next comes Philip Eder 1½ miles; then comes another job of Rogers & Kelly's. In this seven miles are only 25,000 yards of earth work, and over 300,000 yards of rock work, and the bed of the track will rest upon solid rock more than nine-tenths of the whole distance.

The heavy rock work on this entire section is now more than three-quarters done and the prospect is good for a through train between New York and Montreal via Whitehall, Willabro Tunnel and Plattsburgh by October, 1875. The contract on section No. 8 between Ausable River and Plattsburgh has been let to Mr. Doty, who, it is understood, will push the work through with the greatest possible vigor the stone for many of the culverts being already on the ground. But the work on this section is comparatively light; the whole amount of earth work to be done being far less than that contained in a single fill at Port Douglass. We understand that a locomotive is to be put upon the track at Port Kent for a construction train, and that from this point the track will be laid both north and south. The rock work around Trembleau Mountain is all done, and it is expected that Mr. McDonnell will have his contract finished from the southern extremity of the Trembleau Mountain rock cutting to the Wickham Marsh north of Port Kent by July.

#### Train Accidents in May.

On the afternoon of the 1st, the engine of an express train on the Utica Division of the Delaware, Lackawanna & Western road broke a crank pin when the train was near Norwich, N. Y. Both heads of the cylinder were knocked out, the cross head was broken, and other damage was done to the machinery. The train was delayed some time.

On the afternoon of the 1st, a passenger train on the Georgia Railroad was thrown from the track and upset at Rutledge, Ga., by a tornado.

Near noon on the 4th, an east-bound mixed train on the Galveston, Harrisburg & San Antonio road ran over a horse near Alletown, Tex., and six cars were thrown from the track and down a high bank. The cars were wrecked and a brakeman badly hurt.

On the 4th, as a train on the Junction & Breakwater road was approaching the depot in Lewes, Del., the engine became unmanageable, ran into the engine house, demolished the doors

and was badly broken against the frame of the water tank. The engine was completely wrecked and the house much damaged.

On the afternoon of the 4th, three cars of a freight train on the Cairo & St. Louis road ran off the track near Alto, Ill., blocking the road some hours.

On the 5th, a car of a passenger train on the Gulf, Western Texas & Pacific road was thrown from the track and upset near Cuero, Tex., and the conductor was very badly hurt.

On the 5th, a way freight train on the Prairie du Chien Division of the Chicago, Milwaukee & St. Paul road was thrown from the track near Waukegan, Wis., by a broken axle, and 11 cars, mostly loaded with wheat, were badly wrecked, blocking the road some time.

On the morning of the 7th, a passenger train on the Grand Trunk Railway was thrown from the track by the spreading of the rails near West Milan, N. H. Six cars left the track, and one, the baggage car, went down the bank and was badly broken. Six persons were hurt and the road blocked five hours.

On the morning of the 7th, a south-bound passenger train on the New Orleans, St. Louis & Chicago road ran over a cow near Grenada, Miss., and the engine, tender and baggage car went down a bank 25 feet high, all of them being badly wrecked. The engineman, fireman, express messenger and baggage master were badly hurt.

On the 7th, a freight train on the European & North American road was thrown from the track and several cars were damaged.

Very early on the morning of the 8th, a south-bound passenger train on the Belmont line of the St. Louis, Iron Mountain & Southern road was thrown from the track near Diehlstadt, Mo., and the engine and several cars were wrecked. The accident is said to have been caused by the washing out of the road-bed.

On the 8th, a wooden chute used for sliding stone over the track of the Allegheny Valley road, near Franklin, Pa., was blown down by the wind, and a passenger train coming up soon after, the engine was thrown from the track by the timbers which had fallen on the road.

On the morning of the 9th, on the Central Pacific road, near Lucin, Utah, there was a butting collision between two freight trains, by which three engines and 25 cars were wrecked, a brakeman killed and a conductor badly hurt.

On the night of the 10th, eight cars of a freight train on the Vermont & Massachusetts road were thrown from the track near Gardner, Mass., and some of them badly broken.

Early on the morning of the 11th, a Pennsylvania engine ran into some New Jersey Midland freight cars at the Greene street crossing in New Jersey. Several of the cars were badly broken and a man was seriously hurt.

On the 11th, a freight train on the Cairo, Arkansas & Texas Division of the St. Louis, Iron Mountain & Southern road was thrown from the track at St. Francis, Mo., and several cars badly wrecked. The accident was caused by a washout.

On the afternoon of the 12th, the engine of a train on the Wilmington & Weldon road was thrown from the track near Halifax, N. C., by a broken axle, delaying the train some time.

On the afternoon of the 12th, nine cars of a way freight train on the European & North American road were thrown from the track by a low frog at Orono, Me., and some of the cars were completely wrecked.

On the evening of the 12th, a train on the Southwest Pennsylvania road ran over a cow near Connellsville, Pa., and the engine was thrown from the track and down a bank, killing the engineman and fireman and wrecking the engine.

On the evening of the 13th, the engine of an express train on the Detroit, Lansing & Lake Michigan road was thrown from the track at Ionia, Mich., by a misplaced switch. The fireman was badly hurt and the train delayed three hours.

On the afternoon of the 14th, on the Vermont & Canada road, at North Georgia, Vt., three cars of a freight train ran off the track at a defective frog, blocking the road some time.

On the night of the 14th, the engine and five cars of a freight train on the Jeffersonville, Madison & Indianapolis road were thrown from the track near Jeffersonville, Ind., and badly broken, blocking the track several hours.

On the 15th, as a Toledo, Peoria & Warsaw freight train was running down a levee at Keokuk, Ia., a flat car loaded with rails jumped the track at a defective frog and was upset.

On the night of the 15th, some cars of a north-bound passenger train on the Arkansas Division of the St. Louis, Iron Mountain & Southern road were thrown from the track near Poplar Bluff, Mo., where the road-bed had been partially washed out.

The conductor took the engine, which had passed over safely, and went forward for help, but a few minutes afterwards the engine jumped from the track and into the water at a point where the overflowed waters of Black River had completely washed away the road-bed.

On the night of the 16th, an engine on the Jacksonville, Pensacola & Mobile road ran into another which was standing on a siding at Madison, Fla., damaging both of them considerably. The accident was caused by a misplaced switch.

On the 18th, a freight train on the Central Pacific road ran into the rear of a passenger train which was standing at Summit, Cal., damaging an engine and several cars. The accident was caused by the brakes failing to hold the freight.

On the night of the 18th, the engine of a train on the Mobile & Ohio road was thrown from the track near Okatibbee, Miss., by a pile of cord-wood which had been put on the track for that purpose.

Very early on the morning of the 19th, an oil train on the Low Grade Division of the Allegheny Valley road was thrown from the track and wrecked near Reynoldsville, Pa. While the wrecking party were engaged in clearing the track shortly after one of the oil tanks exploded, injuring 11 men.

On the evening of the 19th, near Des Moines, Ia., on the Des Moines & Fort Dodge road, a train ran into some colts, which had strayed upon the track and tried to cross a trestle bridge. The engine was thrown from the track.

On the morning of the 20th, as a passenger train on the Louisville, Cincinnati & Lexington road was near Carrollton, Ky., the rear truck of the tender broke and let the tank down on the track. In this condition it was dragged across a trestle bridge and just as it reached the bank it jumped from the track, dragging three cars after it, one of which broke loose and rolled down a bank 12 feet high. One passenger was seriously hurt and several slightly bruised.

On the morning of the 20th, as a New Jersey Midland train was entering the Pennsylvania depot in Jersey City, the engine jumped the track and ran into the stone platform, damaging itself considerably.

On the 20th, a freight train on the Central Pacific road ran off the track near Carlin, Nev., wrecking 38 cars and injuring three train-men.

On the night of the 20th, a freight train on the Missouri, Kansas & Texas road ran into a culvert that had been washed out by a freshet. The engine and 10 cars went into the ditch and some of them were badly wrecked.

On the morning of the 21st, the mail and baggage cars of a train on the Great Western road took fire when the train was near Paris, Ont., and were entirely consumed, with all the mails which were on board.

On the afternoon of the 21st, the boiler of an engine on the Boston & Albany road exploded while the engine was standing at Pittsfield, Mass. A rent about two feet long was torn in the side of the boiler, and it is said that the plate showed an old crack. The engine was an old one.

On the night of the 21st, a special train of the Richmond & Danville road ran off the track near South Boston, Va. Three

cars were wrecked and five men injured. The accident was caused by a broken rail.

On the morning of the 22d, as a passenger train on the Keokuk & Des Moines road was about six miles from Keokuk, Ia., it ran into a tree which had fallen near the track, knocking out nearly the whole side of a car and damaging it badly.

On the evening of the 22d, the engine of a train on the Central Railroad of New Jersey ran off the track in Elizabeth, N. J., at a misplaced switch.

On the night of the 22d, a freight train on the Southeastern Railroad was thrown from the track near Richford, Vt., by the spreading of the rails, which is said to have resulted from the expansion of the rails by the sun. The engine and five cars went into the ditch.

On the 23d, a construction train on the Buffalo & Jamestown road ran over a cow near North Collins, N. Y., and three flat cars were thrown from the track and badly broken.

On the morning of the 24th, the engine and baggage car of a train on the Chicago, Rock Island & Pacific road were thrown from the track at Moline, Ill., by a misplaced switch, and the engine upset and was badly damaged. The switch is said to have been purposely set wrong.

On the 24th, eight cars of a train on the Atlantic & Gulf road were thrown from the track near Jasper, Fla., blocking the road some time.

On the 24th, as a way freight train on the Port Royal Railroad was near Allendale, S. C., a pole car ran off the track, went into the ditch and was badly broken up, fatally injuring the Section-master and another man and hurting three track hands less seriously. The accident appears to have been caused by a broken wheel.

On the afternoon of the 24th, the engine and one passenger car of a train on the Baltimore & Potomac road were thrown from the track by a misplaced switch near Lafayette, Md.

Near midnight on the 24th, five cars of a freight train on the Michigan Central ran off the track at Comstock, Mich., and some of them were badly broken, blocking the track 10 hours.

On the 27th, a lot of coal cars which were being switched in the Delaware, Lackawanna & Western yard in Utica, N. Y., were thrown from the track by a misplaced switch and ran into some cars standing on another track, wrecking several.

On the 28th, a train of coal cars jumped the track of the Delaware, Lackawanna & Western road in Utica, N. Y., and ran into the end of a barn, knocking down one side of it.

Near noon on the 29th, ten cars of a freight train on the Quincy, Alton & St. Louis road were thrown from the track near Bluff Hall, Ill., by a large stone which fell from a flat car. A brakeman was injured and the track blocked 12 hours.

About 9 o'clock on the evening of the 30th, as a freight train on the Chicago & Iowa road was running between Oregon and Daysville, Ill., an old car broke in two, and with five others was thrown from the track.

On the morning of the 31st, a mixed train on the Chicago & Lake Huron Road broke in two near Attica, Mich., and shortly afterwards the rear part ran into the forward, wrecking several cars and injuring seven passengers, none of them very badly.

On the afternoon of the 31st, on the Northeastern Railroad, near Charleston, S. C., there was a butting collision between two freight trains, by which a car was badly broken.

On the afternoon of the 31st, a train on the Southern Minnesota was thrown from the track near Rushford, Minn., by a broken rail, wrecking several cars and injuring the conductor and two passengers seriously.

On the night of the 31st, a gravel train on the Delaware, Lackawanna & Western road was thrown from the track at Pequest Furnace, N. J., by a piece of iron which had been put across the rail at a switch and tightly wedged down, evidently for the purpose of wrecking a train. One man was killed and five others hurt.

This is a total of 54 accidents, whereby six persons were killed and 43 wounded. Four accidents caused the death of one or more persons, twelve caused injury but not death, while 38, or 70 per cent. of the whole number caused no injury sufficiently serious to be recorded.

These accidents may be classified as to their nature and causes as follows:

COLLISIONS:	
Rear collisions.....	3
Butting collisions.....	3
DERAILMENTS:	
Unexplained.....	11
Misplaced switch.....	11
Washout.....	5
Cattle on track.....	5
Defective frog.....	3
Broken rail.....	2
Broken axle.....	2
Spreading of rails.....	2
Accidental obstruction.....	2
Malignant obstruction.....	2
Broken truck.....	1
Broken car.....	1
Broken wheel.....	1
Runaway engine.....	1
Wind.....	1

Boiler explosion.....	1
Car burned while running.....	1
Broken crank pin.....	1
Running into fallen tree.....	1

Total..... 54

One collision was caused by the failure of brakes, one by a misplaced switch, and one by a train breaking in two. Eighteen accidents were caused by defects or failures of roads or equipment, to which, probably, most of the unexplained derailments could be added. The number of misplaced switches is larger than it should be, indicating too much carelessness in that respect.

The number of accidents is very small, smaller, indeed, than has been recorded for many months. Either the railroads are being more carefully worked, or the accidents are not recorded or mentioned. Perhaps both causes contribute to the result. As compared with May of last year there is a decrease of 35 accidents, or 38 per cent.; a decrease of 13, or 68 per cent., in the number killed, and of 8, or 16 per cent., in the number wounded.

For the year ending with May the record is as follows:

	No. of accidents.	Killed.	Injured.
June.....	83	23	104
July.....	64	20	77
August.....	73	18	106
September.....	89	27	60
October.....	81	16	69
November.....	82	19	48
December.....	74	12	36
January.....	131	10	106
February.....	211	11	73
March.....	122	17	67
April.....	60	9	40
May.....	54	1	—
Totals.....	1,124	179	984

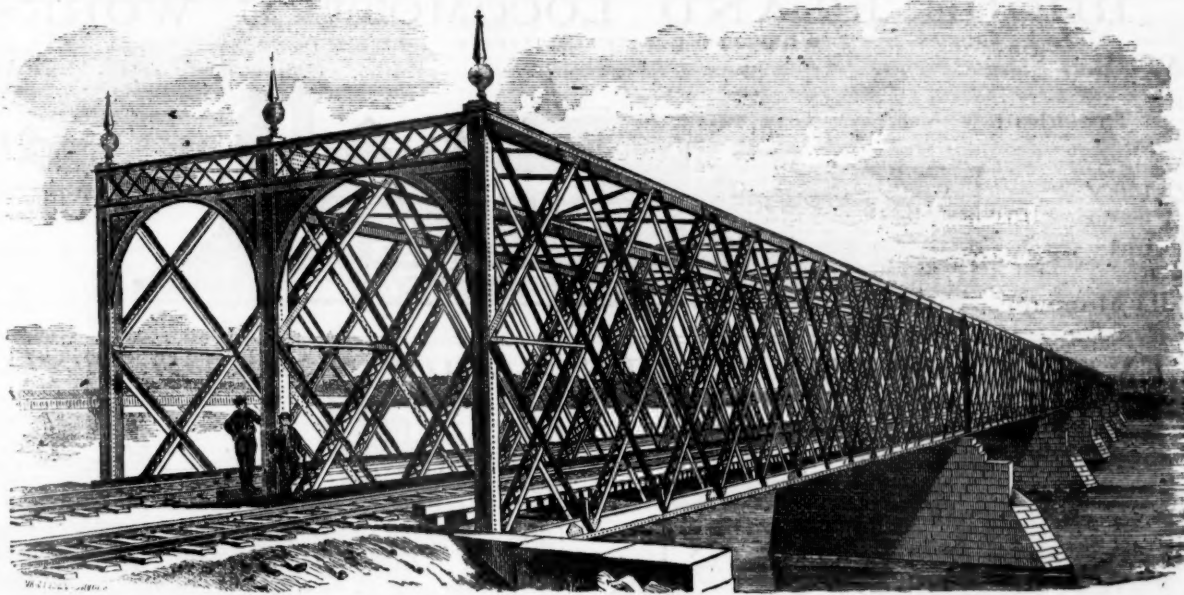
The averages per day for the month are 1.74 accidents, 0.19 killed and 1.39 injured; for the year they are 3.06 accidents, 0.49 killed and 2.70 injured.



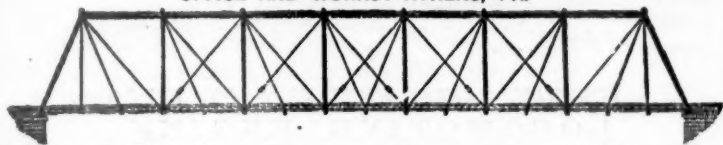
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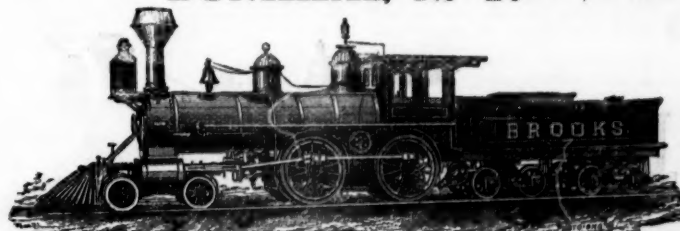
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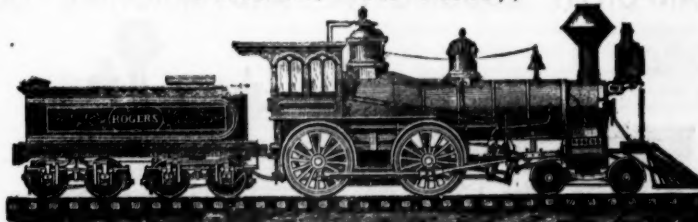
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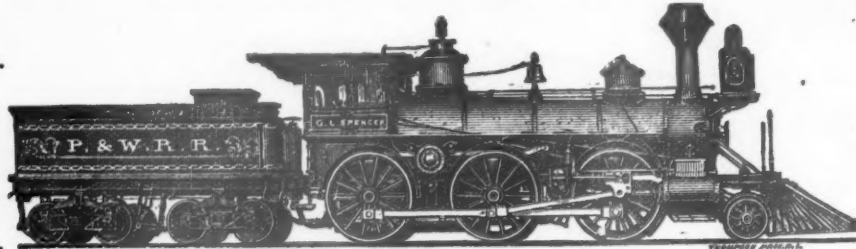
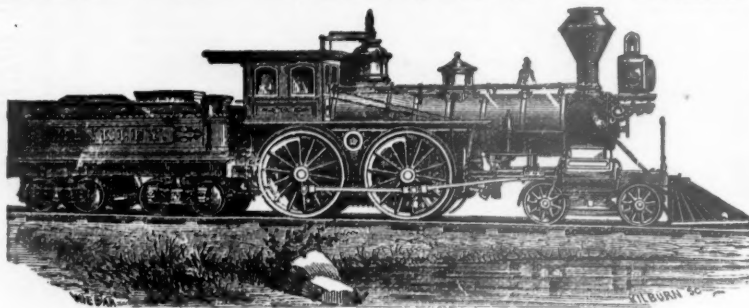
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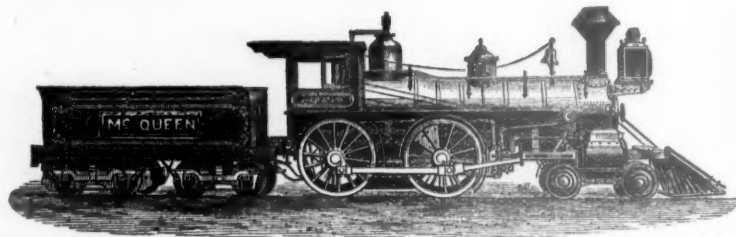
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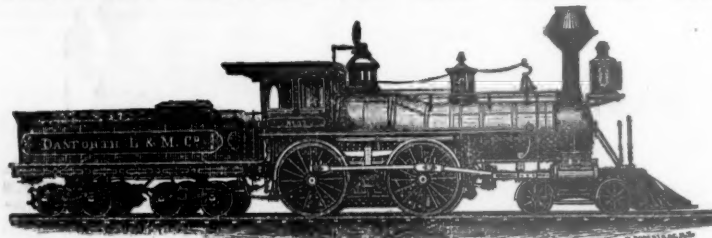
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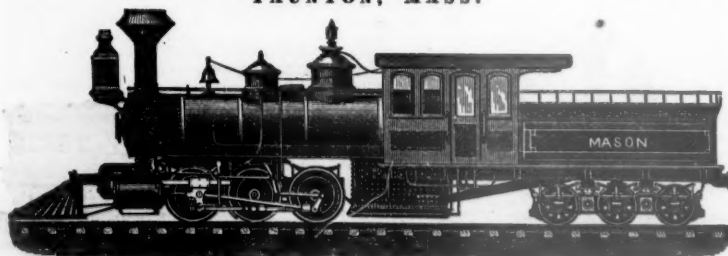
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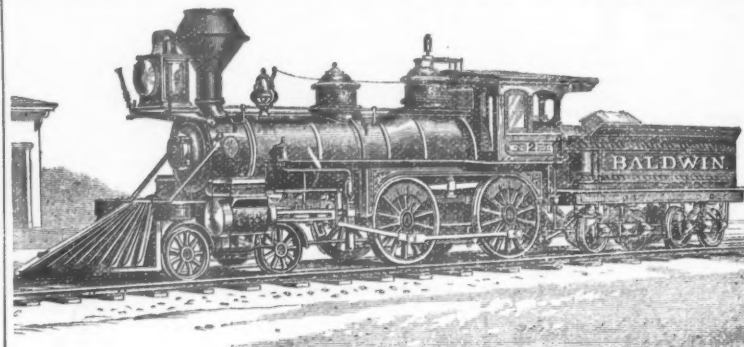


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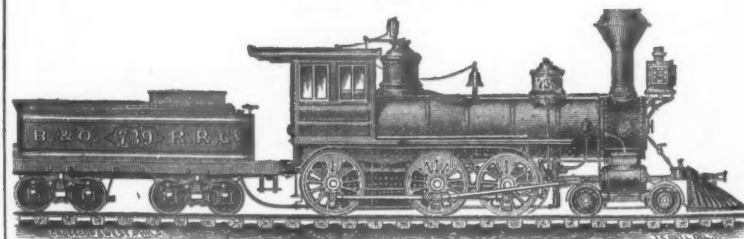
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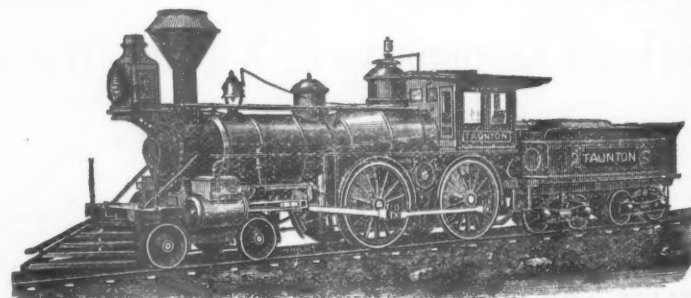
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